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NATIONAL MUSEUM OF CANADA
W. H. COLLINS, ACTING DIRECTOR

BULLETIN No. 83

ANTHROPOLOGICAL SERIES, No. 19

**Roebuck Prehistoric Village Site,
Grenville County, Ontario**

BY
W. J. Wintemberg



FACSIMILE EDITION
1972

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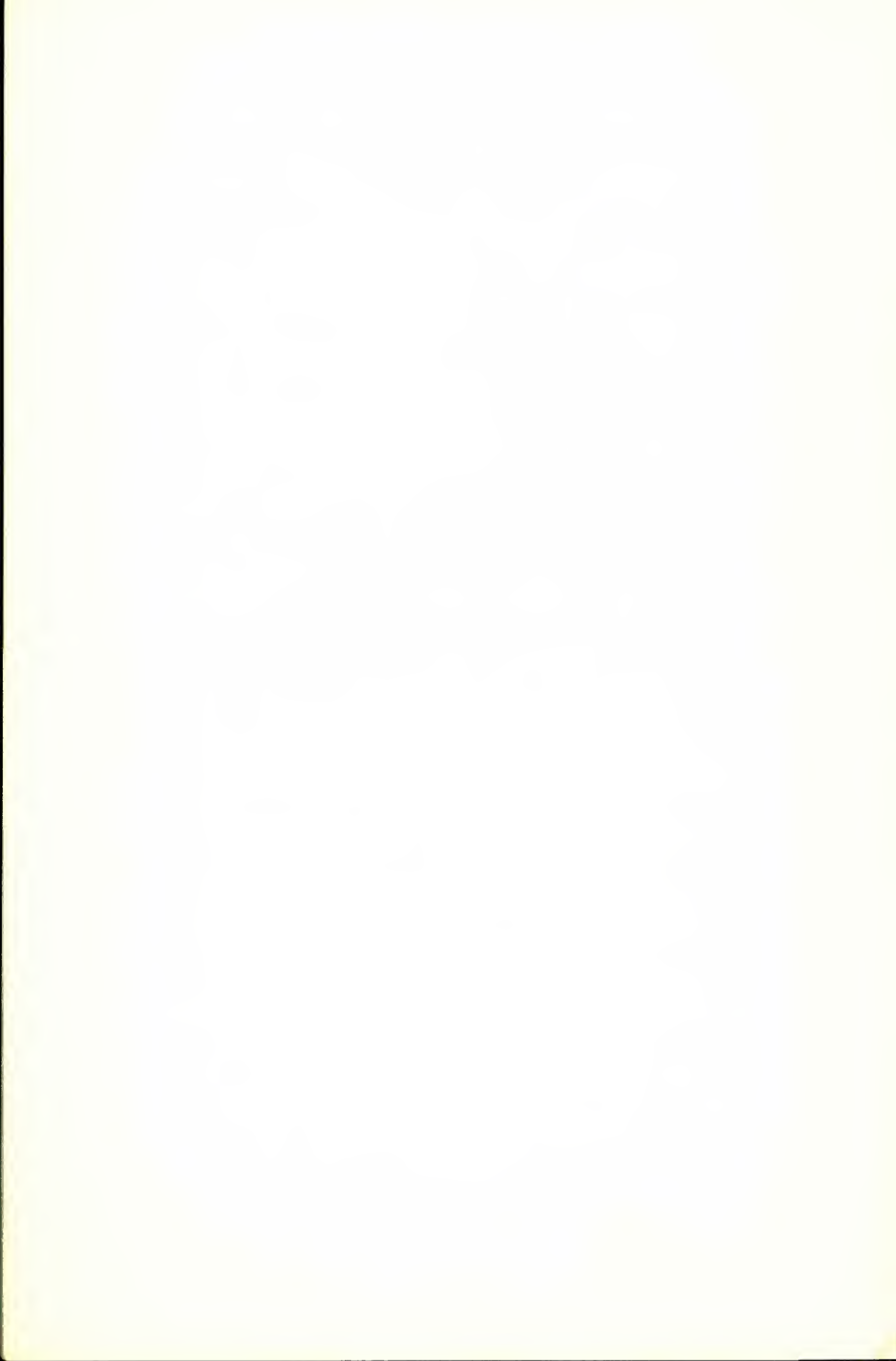
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ROEBUCK PREHISTORIC VILLAGE SITE, GRENVILLE COUNTY, ONTARIO

INTRODUCTION

The Roebuck site, a prehistoric, palisaded village site of Iroquoian culture, is located on the north half of lots 2 and 3, con. VI, Augusta tp., Grenville co., Ontario, about $\frac{1}{2}$ mile northeast of the village of Roebuck (from which it is named), 8 miles north of St. Lawrence river at Prescott, and about 40 miles south of Ottawa. An intensive exploration of the site was made by the author, under the general direction of Harlan I. Smith, from June 17 to October 28, 1912, and from April 24 to May 20, 1915.

Although known at least since 1845, and subject for many years, like many other sites in Ontario, to considerable desultory digging and surface searching by local collectors, the Roebuck site had never been systematically explored. Much of the material found at the site had been lost and some of it scattered without any specific data as to the particular site or locality from which it came.

The collection secured from the site by the writer is large enough to give us an idea of the culture of the inhabitants, one hundred and sixty-seven boxes of specimens, including human skeletons from eighty-three graves, being secured. In this paper an attempt is made to characterize the culture so as to form a measure with which to compare the results from other Iroquoian sites in eastern Canada, and to enable us to distinguish material found in nearby sites of other cultures.

ACKNOWLEDGMENTS

Messrs. James Kelso and Nathaniel White kindly gave permission for the explorations on their respective properties, and we are especially grateful to the latter for presenting a number of specimens and lending others; also to Mr. William McKinley for presenting a pipe found on his property about one-quarter mile west of the site. The late Dr. M. O. Malte, of the Botanical Division, National Museum of Canada, identified one of the plant remains; Chief Justice F. R. Latchford, of Toronto, identified most of the clam shells; Earl A. Reid, of the Division of Fishes, U.S. National Museum, the fish remains; Dr. Alexander Wetmore, Assistant Secretary of the Smithsonian Institution, Washington, the bird remains; and Dr. Gerrit S. Miller, of the Division of Mammals, and Dr. J. W. Gidley, of the Division of Fossil Mammals, both of the U.S. National Museum, identified the mammalian remains. The author wishes to record here also his appreciation of Mr. Smith's advice and assistance in the preparation of parts of this monograph and the maps.

The accompanying illustrations of the artifacts are from photographs and from drawings by the author. Two text figures are the work of

O. E. Prud'homme, formerly artist of the Anthropological Division, National Museum of Canada. Those of burials are from photographs by the author. The maps were drawn by A. Joanes of the Draughting Division, Geological Survey, Canada. Except where otherwise stated all illustrations are about one-third natural size.

THE SITE

The Roebuck site, as shown on Map 1599, covers about 8 acres, being about 20 rods wide north and south, by about 64 rods long, east and west. It is on land owned by Messrs. James Kelso, Nathaniel White, and J. Henry, and probably extended on to that of Mr. George Dunbar on the north side of the road, as suggested by specimens found there.

The main site occupies the more or less flat top of a long sandhill, high and dry for habitation, surrounded on the north, east, and south by a black alder swamp. The south side of the hill is a steep bank, rising about 20 feet above the level of the swamp. This bank gradually becomes less steep to the southeast, east, and northeast, there rising only to about 15 feet. On the north the slope is still more gradual. Some of the older residents claimed that the hill had been higher than it is at the present day. Continual ploughing and the effect of the wind on the loose sand may have reduced its height since it was first ploughed some time before 1845. The soil consists largely of a light yellow sand, in some places with little or no humus. After cultivation the loose sand is easily shifted by winds; in fact, along the east side of the line fence, the Kelso pasture is thickly covered with sand blown from Mr. White's field, which is under cultivation most of the time.

The site was indicated by scattered surface evidences of habitation such as spots of blackened soil with heat-cracked stones, fragments of stone mortars, weathered potsherds, and bleached freshwater clam shells.

Guest, who visited the site in 1854, seems to have believed that the sand-hill on which the site is located was an artificial mound.

AGE OF THE SITE

The age of the site is unknown and there is no positive evidence pointing to its great antiquity, but that it was probably inhabited and deserted by the Indians before the arrival of the first white explorers in this part of Canada is suggested by the absence of iron arrow-points, iron axes, brass kettles, and other articles that show evidence of contact with whites. A single blue glass bead was found less than 9 inches deep in the spring on the south side of the site, but this, as mentioned under "beads," was probably lost recently. It would seem that had the site been inhabited even for a year or two after the Indians were able to secure glass beads, iron axes, and other trade articles from the whites farther down the St. Lawrence, some of this material must have penetrated through the channels of trade as far as this site. Had the people obtained even a little of it, we might expect to find it represented among the finds, when we consider the

enormous number of specimens of human handiwork collected at this place, and the large amount of soil that was carefully dug over and examined.

Several pine stumps still remained on the site in 1912, one of them, $2\frac{1}{2}$ feet in diameter, on refuse deposit 3, but none was over 3 feet in diameter, and they were all too much decayed to admit of ascertaining their age by counting the rings of annual growth. Guest (page 272) refers to a stump $4\frac{1}{2}$ feet in diameter, which stood on a crescent-shaped embankment at the west of the site.

PHYSIOGRAPHIC FEATURES, TIMBER, ETC.

The rocks of the region, which belong to the Ordovician system, outcrop within $\frac{1}{4}$ mile west and 3 miles east of the site. The land is gently undulating.

Indian creek, winding through the marshy lands on the south, passes within a hundred feet of the Roebuck site and, about a mile to the southeast, empties into Nation river, a tributary of the Ottawa, although the site is within 8 miles of the St. Lawrence. According to Mr. George Drummond, a life-long resident in the neighbourhood, the creek was once navigable for canoes, but it is now considerably reduced in size and its course has been diverted within the memory of people living. The rising of the water of the Nation, caused by the building of the dam at Spencerville, has resulted in the mouth of the creek being choked with water weeds, and farther up, near the Roebuck site, its course lies through thickets of cedar, alder, and willow. A small stream, a feeder of Indian creek, having its source in one of several small springs in the bordering swamp, flows from the northwest along the northeast and east sides of the site. Before the land was cleared this swamp may have been deeper or even open water, and in any event would have protected the site, leaving at the northwest only a neck of dry land that would afford easy access to the village. This was probably a factor that weighed with the Indians in their choice of the location.

Perennial springs of pure water occur at the edge of the swamp, and, although its purity may not have weighed with the Indians as it does with us, it made the place still more suitable as a site for a village. The spring below the hill, south of refuse deposit 1, is shown on the map; four others are not indicated, two being in the swamp north and east of the site, one about 25 feet southeast of Mr. Henry's barn, where the contour of the bank has been changed within recent years, and another in the bank west of the barn. If the water in the swamp was higher when the site was occupied it would have covered most of these springs.

The country was heavily wooded. The village site and part of the Hutton, Kelso, and Dunbar farms were covered with small pines, whereas the surrounding country was covered with large pines, according to the late Peter Drummond, one of the oldest white residents, a man born and raised in the neighbourhood, who remembered when it was cleared. The lands surrounding the site, which were covered with small pines, were probably the cornfields of the village. Besides pine there are red and sugar maples, elms, beeches, cedars, oaks, birches, poplars, spruces, and alders growing in the vicinity, and tamaracks in the swamp. Fruit of the choke-cherry, wild plum, and wild grape was also available, and sumac is common.

REFUSE HEAPS OR DEPOSITS

There were twenty-four refuse heaps or deposits, nearly all being more or less oval, and composed of refuse and ashes containing artifacts and animal bones. Those on the steep slopes and on the edge of the swamp were probably piles of material intentionally thrown out of the way, whereas those on the more level parts of the site are shallow and probably accumulated unintentionally in front of doors, around lodges, and near fireplaces; there is no absolute criterion for identifying each. The fact that in very few of those examined was there found any perceptible burning of the basic soil suggests the random scattering of refuse rather than its heaping on top of permanent fireplaces. Then, too, where the ashes and refuse were in stratified layers, no burnt sand occurred below the layers, which would seem to indicate that the ashes were not formed in situ by a fire, but were scraped or otherwise brought hither from fireplaces, and in some cases spread evenly. Some of the deposits, however, may have been created by not removing the debris of the house floor.

Guest refers to four of the refuse heaps as tumuli, which he says were "situate at the corners of a parallelogram, containing between one and two acres of ground" (page 273). They were "but slightly raised above the general level—say from two to four feet" (See Figure 1).

Most of the deposits examined were stratified, some being composed of as many as four and five intercalated layers of ashes and refuse, the ashes in some cases interspersed with streaks and pockets of sand and black refuse. On the bottom there was usually a thin layer of carbonaceous matter, which, except where there were burials, rested on the undisturbed sand below. The upper surface of this sand had been whitened, perhaps by the action of the potash salts in the ashes.

Artifacts were found in all layers of the deposits, but very few in the ashes and those usually burnt.

Deposit 1, in the southeast corner, where the western slope of the hill is about 45 degrees, and the eastern more gradual, was about 95 feet long by 50 feet wide, some of the refuse extending even to the spring below; evidently it was much spread by ploughing. The maximum depth was 4 feet. Only a small portion had been disturbed by people digging for specimens. A large number of specimens and thirty-nine human skeletons, as shown on Map 1600, were found in and around the deposit.

The spring south of this heap contained refuse, which probably came from the deposit. In the layer of soggy, black muck at the top, which was about 18 inches deep, were branches of trees, bark, etc.; below this was a layer of sand nearly 4 inches deep, which rested on a layer of black material like peat, perhaps corresponding to the layer of carbonaceous matter in the refuse deposits. In this bottom layer were pieces of cut and burnt wood, pottery fragments, and animal bones, but no ashes. The muck layer produced the most artifacts; in it were preserved squash seeds that retained their natural yellowish colour, a hazel nut, not carbonized, and a wooden disk with a hole through the middle.

Deposit 2 covered most of the slope on the east side of the hill. It was about 85 feet north and south, by about 45 feet east and west, with a maximum depth of about 30 inches. It, also, was much spread and reduced in height by many years of ploughing, yet the middle—possibly the original

heap—made a mound nearly $1\frac{1}{2}$ feet high. Three large, bowl-shaped hollows extended down into the sand below the heap. In one, about 4 feet in diameter and $2\frac{1}{2}$ feet deep, the sand at the bottom was hard, breaking away in chunks, and darker than the surrounding soil, but the stones in the hollow showed no signs of having been burnt. In the second hollow, which was about 1 foot below the bottom of the heap, the sand at the bottom was also hard; but in the third, which was 4 feet 4 inches deep, the sand at the bottom was soft, and filled with blackened earth and ashes, mingled with patches and streaks of sand. Near the bottom was the gorget made from a piece of human skull, seen in Plate XV, figure 33. Five human skeletons were found in and around this deposit.

Deposit 3, on the edge of the swamp and entirely outside the palisade, was about 20 feet in diameter, with a maximum depth of 18 inches. A thin layer of pure ashes extended through the middle, below which was a mixture of black refuse and ashes. Many animal bones and clam shells, but few artifacts, were found in this comparatively small deposit.

Deposit 4, on the steepest part of the slope on the north side of the hill, with only a small part extending outside the palisade, was about 85 feet long, east and west, by 50 feet wide, with a maximum depth of 24 inches. The refuse extended to within a few feet of the swamp, much of it having been spread down hill by cultivation and erosion. This deposit yielded few artifacts. One human skeleton was discovered about its middle.

Deposit 5, on the nearly level ground extending to the edge of the swamp, was about 45 feet long, northeast and southwest, by about 23 feet wide. A few unusual specimens and one human skeleton were found in it.

Deposit 6, near the level top of the hill, south of heap 4, was about 15 feet in diameter and very shallow.

Deposit 7, in the northwest corner of the Kelso field and mostly outside the palisade, was about 70 feet long by about 45 feet wide, with a maximum depth of 2 feet, black refuse and ashes being mixed without well-defined layers, but containing artifacts.

Deposit 8, oval in outline and about 36 feet wide and 40 feet long, with a maximum depth of 14 inches, lay on the top of the hill. Nothing of importance was found in it.

Deposit 9 was about 35 feet wide by 40 feet long and 8 inches deep. Only a small portion was excavated.

Deposit 10, which was possibly one of the deposits mentioned by Guest as tumuli, is about 50 feet in diameter and 2 feet deep. There was a layer of ashes from 3 to 4 inches thick near the middle, but no fire-places were found. Many specimens were discovered in this deposit.

Deposit 11, possibly the tumulus at the northeast corner of the parallelogram referred to by Guest and shown on his map of the site (See Figure 1), was situated on the gradual slope of the north side of the hill and was about 40 feet wide by 75 feet long. The maximum depth was 18 inches in the centre and about 6 inches where it had been spread by cultivation. A thick layer of black refuse at the top rested on a thin layer of ashes, below which was another of refuse; in places, especially toward the edges, there were no ashes. In this deposit there were two pockets or pits filled

with refuse; one was 3 feet wide by $3\frac{1}{2}$ feet long and about 3 feet deep; the other, about 2 feet deep, had a layer of black refuse at the top, then a layer of sand 6 to 8 inches deep, then another layer of refuse below that. Two human skeletons and many artifacts were found in this deposit.

Deposit 12, probably greatly spread by cultivation, and now about 65 feet wide by 85 feet long, with a maximum depth of 11 inches in the portion excavated, was on the flat top of the hill. Its contents were unimportant.

Deposit 13 lay on top of the bank, south side of the hill, and was about 45 feet wide by 90 feet long and 14 inches deep. There was little ash in layers, but a quantity was found in sixteen pits, some round and others oval, in certain parts of the deposit (*See Map 1599*). These pits were from $1\frac{1}{2}$ to nearly 5 feet in diameter, and from $1\frac{1}{2}$ to $2\frac{1}{2}$ feet deep. In one spot the ashes were about 6 inches deep and the sand below it had been burnt a bright red. Artifacts and even pottery fragments were scarce in this rather large deposit. A skeleton of a child was found near the northern edge.

Deposit 14 consisted mainly of black material with only a little ash, and was about 25 feet in diameter and about 2 feet deep near the middle. Some scattered refuse, part of which appeared to belong to a separate deposit, extended northwestward.

Deposit 15 was on the south side of the hill, where the slope was about 45 degrees, and was probably formed by the debris being thrown diagonally down the hill-side; a slight mound of refuse could be seen extending from about the middle of the slope to the bottom. The deposit was about 65 feet long, 35 feet wide, and about 4 feet deep at the bottom of the slope. In several places the dumps of ashes were quite distinct; in others the ashes were more or less stratified. The deposit being on the steep slope was undisturbed by ploughing and despoilers had not found it, consequently we found the well-preserved piece of charred fabric shown in Plate XVIII, figure 6. Many artifacts and two human skeletons were found in this deposit.

Deposit 16, about 26 feet wide by 30 feet long, was very shallow and so was not excavated.

Deposit 17, extending into the swamp on the south edge of Mr. White's field, was about 100 feet long, about 25 feet wide, and had a maximum depth of about 4 feet. The refuse had been dumped down the sloping bank; the ashes at the bottom were in an almost solid bed, in places over 2 feet thick, with refuse and top soil about 2 feet thick above it. Toward the west end of the dump there were two layers of black refuse; the upper one, mixed with ashes, being 2 feet deep and the lower one 6 inches; and between these layers was an irregular layer of ashes about $1\frac{1}{2}$ feet thick. Very few important artifacts and few pottery fragments were found in it.

Deposit 18, on the edge of the bank, south of Mr. White's barn, was about 58 feet long and 25 feet wide, and extended into the swamp at the bottom of the slope. Possibly it was formed by refuse thrown from cabins that stood near deposit 19. It contained few artifacts.

Deposit 19, about 50 feet long, 45 feet wide, and about 18 inches deep, corresponds in location to the "tumulus" at the southwestern corner of a parallelogram shown on Guest's map. Very few artifacts were found in it.

Deposit 20, about 50 feet long and 30 feet wide, with a maximum depth of 9 inches, may be the "tumulus" at the northwest corner of the above-mentioned parallelogram. There was very little ash in this deposit and very little of it was in layers. It yielded a few artifacts.

Deposit 21, on the north side of the site, covered an oval area about 20 by 25 feet in diameter, and was about 1 foot deep. In one part was a small patch of carbonized matter with charred twigs and leaves of the hemlock spruce, mixed with charred corn kernels and beans, which may be the remains of a corn cache.¹ This deposit yielded a few important specimens.

Deposit 22 was about 25 feet in diameter, and shallow. It was not excavated.

Deposit 23, which was covered by about 2 feet of sand, was about 50 feet long and 25 feet wide, with a maximum depth of 1 foot. Very few artifacts were found in the part excavated.

Deposit 24, about 34 feet long and 20 feet wide, in Mr. White's garden on the north side of the road, about 38 rods west of the Kelso-White line fence, was small and faintly defined. No ash layers were observed, but it contained a few artifacts.

There was another smaller and very faintly defined deposit about 45 feet northeast of deposit 24, but nothing was found in it.

In several places, in the course of trenching that part of Mr. White's field between deposits 20 and 21, and east to the line fence, a few small deposits of refuse from 1 to 3 feet in diameter, and containing a few artifacts, were discovered. One was between skeletons Nos. 67 and 69. Some ashes and blackened soil were also found above skeletons Nos. 76 to 78, but in this case they were merely used to fill in the graves. There was another deposit, deeply covered with sand, in the northeast corner of the field.

DEFENSIVE WORKS

Guest's map (Figure 1) shows what he describes as "a half moon embankment, extending some ten rods across a neck of land, terminating to the north in a swamp, and to the southwest near the edge of a creek. . . It has three openings, which are from twenty to twenty-five feet wide" (Guest, pages 271-272). Mr. White remembers when this embankment could be distinctly seen, but the writer, on his last visit to the site in 1927, could see only a small portion in the meadow north of Mr. White's garden, on the north side of the road.

The traces of defensive palisades surrounding the main part of the village, as indicated on Map 1599, consist of round black spots that were found in the yellow sand below the refuse. These are due to the discoloration of the earth caused by the removal or decay of the posts and the subsequent subsidence of vegetal mould and dark-coloured refuse into the old cavities. The material in these holes was softer than that around them, so that sticks could be easily thrust down into them. In some cases these traces of posts were at somewhat regular intervals and in nearly

¹According to Parker (2: 35, 36) hemlock boughs were used to line corn pits at ancient Iroquois sites in New York and they are used by modern Iroquois for the same purpose.

straight rows, most of them being distinct, especially when freshly excavated and before the sand became dried out by the sun; but some were faint or scarcely noticeable. Posts of structures that had been superseded by others are probably represented by some of the fainter spots. Following out some of the rows of post holes beyond the refuse, by removing the sod and surface soil where it was mixed and disturbed by cultivation or erosion, other post holes were found where there was no perceptible refuse.

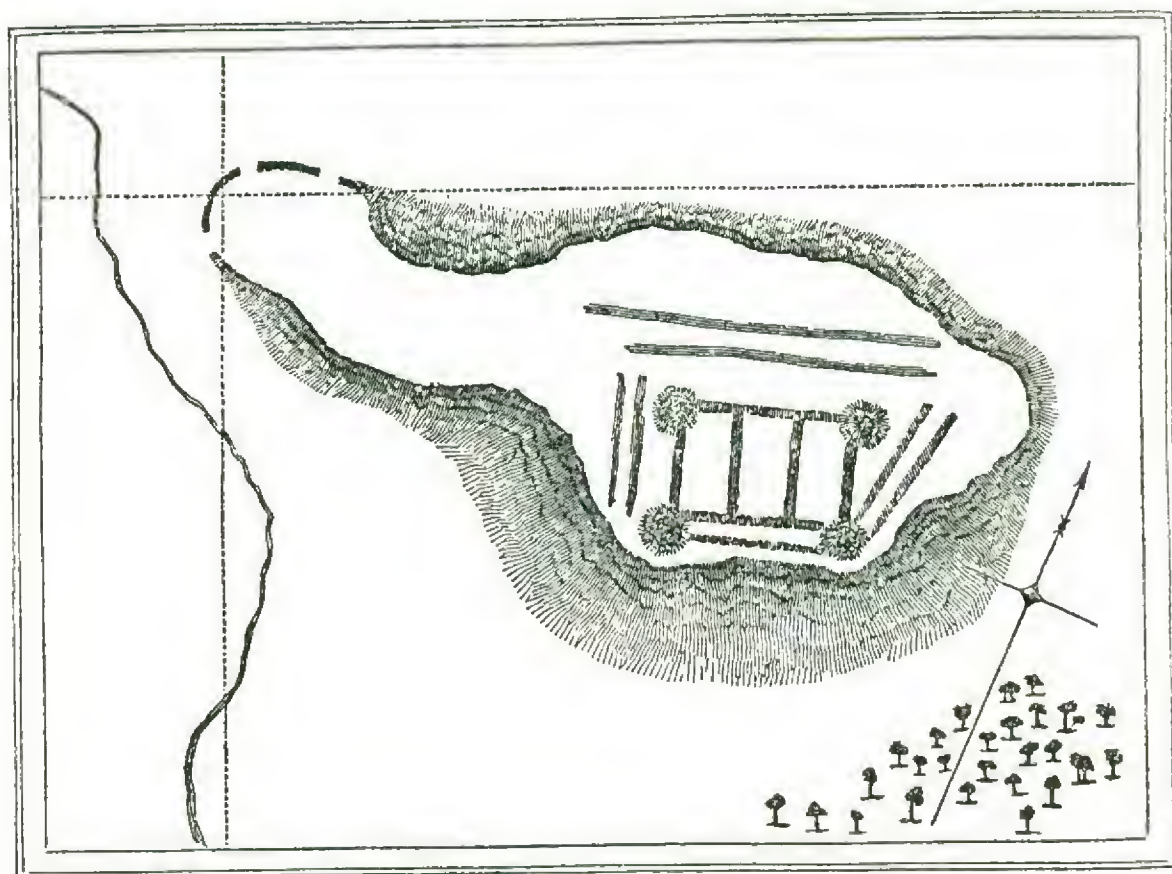


Figure 1. Guest's map of the site.

Post holes extending through an ash layer between two layers of black refuse, with points extending about 5 inches into the sand below, as in the isolated group between skeletons 16 and 33 in refuse deposit 1, suggest that the posts must have been driven through the layers into the sand, as there was no sign of filling between the posts and any hole that might have been dug for them. On the other hand, if the deposit were formed around them, the posts originally were set only 5 inches or less in the ground.

Most of the holes were about 3 inches in diameter, but some were up to 6 inches in diameter, the latter mostly in that part of the single row in refuse deposit 5. The depth varied, some of those in deposit 1 being from 15 to 32 inches deep. They were from 3 to 24 inches apart and in some places farther.¹ Cross-sections of the holes showed that the bottom of the posts was pointed.

The post holes of the palisade, as indicated on Map 1599, were found chiefly between the hill top and the swamp, extending around the whole hill

¹According to Champlain (I, p. 132) the posts of the Iroquois fort attacked by him in 1615 were "not more than six inches apart."

as far as excavated, that is, except the northwestern part, on the narrow sand ridge on Mr. Henry's farm. For the most part they follow the irregular outline of the hill. There were two, and in some places three, rows of post holes along the top of the bank on the southwestern part of the site, but only one along the middle of the south side, probably because this part of the site was naturally the most impregnable on account of the greater steepness of the bank. At the eastern end of refuse deposit 1 this single row became lost in a maze of holes and emerged in three rows from about 4 to 12 feet apart. The inner row formed an irregular line extending to refuse deposit 2. From the outer, which in places expanded into two rows about 1 foot apart, an irregular row branched off towards the inner row and over the hill into deposit 8. In deposit 2 the outer palisade for the most part was in three rows, and between it and refuse deposit 4 there were two rows. A single row extended from about the middle of deposit 4 to the middle of deposit 5, and from one to three rows from there on through deposits 11 and 7 to the line fence. One of these three-rowed portions was in the east half of the part crossing deposit 11 and was about 48 feet long. In this the holes were in nearly regular rows, from 1 to $1\frac{1}{2}$ feet apart. About 60 feet west there was another portion about 36 feet long, in which the arrangement in rows was not quite so apparent. There was a single row in deposit 7, which, however, extended for only about 24 feet, and beyond it to the west there was a gap of about 12 feet. West from the fence, beyond the area shown on the map, the holes were in two rows for 10 feet, then in three for 15 feet, in four for 22 feet, in two to a point 20 feet east of the Henry-White line fence, then in three rows for 5 feet, and in two rows on to the fence. On the south side of the road near Mr. Henry's gate, and in line with the palisade on the north side of the site, were what looked like three post holes. In Mr. White's field on the north side of the road, east of the garden, there was an irregular group of post holes near the road, and a few feet distant an irregular row extending about 30 feet west nearly to the garden fence. There was a short row of holes, in line with this row and reaching the White-Dunbar fence, in the west part of the garden. Crossing it was a row running north and south in refuse deposit 24, and a straight row running east and west about 12 feet away from the fence extended eastward from this in deposit 24. These rows may be part of the palisade, although all are single.

Although Huron (Champlain, III, page 131, and Sagard, 1, 115) and Mohawk villages (Wilson, page 90) are known to have been surrounded by two to four rows of palisades, it is possible that here there was originally only one row of posts, but later those parts of the palisade that were found to be weak were strengthened by planting an additional row inside, outside, or in both places. On the other hand, the extra rows may be traces of palisading put up to replace decayed, burnt, or otherwise destroyed posts. The three widely separated rows between deposits 1 and 2, and across deposit 2, may represent such successive structures; the inner two being weaker may have been built first, and replaced by the stronger, outer one.

The width of the palisade, where there were four rows of post holes, is about 5 feet.

The palisade, no doubt, as did many Iroquois stockades, consisted of long,¹ pointed posts set upright in the ground; the dimensions of the posts being probably greater than the diameter of most of the post holes discovered.² It is probable that the palisade was reinforced on the inside with large pieces of bark, as among the Hurons,³ because the posts themselves, which were mostly far apart, would not have afforded much protection against the arrows of enemies; perhaps, also, the posts were interlaced with branches of trees.⁴ Cartier describes the palisades of Hochelaga as follows: "The village is . . . completely enclosed by a wooden palisade in three tiers, like a pyramid. The top one is built crosswise, the middle one perpendicular, and the lowest one of strips of wood placed lengthwise. The whole is well joined and lashed after their manner" (pages 155-156). It is quite certain that the Roebuck palisade was not built the same as that of Hochelaga, because, judging from Cartier's narrative, the outer rows of timbers necessarily had to be set slanting against the middle row to be "like a pyramid." All the post holes found at the site, at least in what must have been the palisade, were vertical; a few holes in a small group in deposit 4 only were found to be slanting, but these were too isolated to have had any connexion with the palisade.

The gate of the palisade was probably located somewhere along the semicircular embankment across the narrow part of the site, perhaps at one of the openings mentioned by Guest, this being the only approach to the village owing to the other sides being surrounded by swamp. The stockade at Hochelaga also had only one gateway (Cartier, page 155).

Perhaps here, as at Hochelaga, there were galleries behind the palisade surrounding the village, which were "provided with rocks and stones for the defence and protection of the place" (Cartier, page 155).

There seems to be no apparent connexion between some of the rows of post holes forming the palisade and the lines of circumvallation shown in Guest's map, reproduced in our Figure 1. Although his outline of the site is tolerably accurate the positions of the various features he mentions may be more diagrammatic than correct. His double lines of circumvallation on the north side could scarcely be connected with the palisade on that side of the field.

HABITATIONS

The houses of these people may have been such as to leave no very marked depressions or signs other than the great abundance of village refuse in certain places, although, judging from Guest's words, "within which are to be seen the regular streets and lines of a village" (page 273), some evidence of their location may have been present in 1854. Locations of houses and other structures seem to be indicated by some of the post holes that do not appear to be part of the palisade; for instance, the confused maze of post holes in deposit 13, extending to the northern edge of

¹According to Cartier (p. 155) the posts of the palisade at Hochelaga were "two lances high"; the stockade of the Huron village of Carhagouha, Champlain says (I, p. 128), was 35 feet high, and that of the Iroquois village attacked by him in 1615, 30 feet (III, p. 131).

²Van Celler (Wilson, p. 90), referring to some of the posts in the stockade of the Mohawk town of Tenotoge, says they "were so thick that it was quite a wonder that savages should be able to do that." Champlain (I, p. 132) says the Mohawk fort "was made of the trunks of trees as large as could be conveniently transported."

³Sagard (I:115), describing the palisades of the Hurons, says in part: "Redoublez par dedans de grandes and grosses escorces, à la hauteur de huit à neuf pieds."

⁴Champlain (III, p. 131) says the palisade posts of the Mohawk fort were "interlaced with each other, with an opening not more than half a foot between two."

the deposit and from there west and then south for about 30 feet, may indicate where three walls of a house stood. The single, straight row of post holes, west of deposit 19, may represent the wall of another house, and the rows in deposit 20 also suggest that a small house, with entrances at east and west, stood on this part of the site. One cannot easily account for the large numbers of other irregularly distributed groups of post holes, in which no definite arrangement is apparent, seen in heaps 1, 2, 4, 7, 8, 10, 11, and 13, except on the assumption that they represent several successive structures, each in a different position and of different dimensions.

The outline of the level top of the hill indicates that the village was long and narrow rather than circular, as at Hochelaga. It is possible that the houses stood in the clear space on each side of the row of refuse deposits in the middle of the more or less level top of the hill. There would be room for about twenty-four houses, each about 125 feet long and 30 feet wide, in four separate rows, the space between the rows and the houses in each row being about 20 feet.

The houses here were probably of the same type as those at Hochelaga, which Cartier describes as follows: "There are some fifty houses in this village, each about fifty or more paces in length, and twelve or fifteen in width, built completely of wood and covered in and bordered up with large pieces of the bark and rind of trees, as broad as a table, which are well and cunningly lashed after their manner. And inside these houses are many rooms and chambers; and in the middle is a large space without a floor, where they light their fire and live together in common. Afterwards the men retire to the above-mentioned quarters with their wives and children" (pages 156-157). The Mohawk houses described by Van Curler were similarly constructed, but exceeded those of Hochelaga in dimensions; he gives the height as "22 to 23 feet," and states that they were "mostly flat at the top" (Wilson, page 87). According to Bartram (page 40) the roofs of the Onondaga houses were rounded.

RESOURCES AND MATERIALS USED BY THE PEOPLE

The people of this site, as is indicated by the results of the explorations, depended on a variety of natural products for food and for materials from which to make clothing and artifacts.

FOODSTUFFS

Both vegetal products and animal flesh were used as food. That the people did not exercise much discrimination in the choice of animal foods is suggested by the presence of bones of animals that would be considered unfit for food by whites. In this respect the inhabitants did not differ from other Iroquois.¹

No evidence was discovered of the existence of a taboo respecting the disposal of the bones of animals, as among some Algonkian tribes, mentioned in the Jesuit Relations of 1636 (X, 164). The bones of the beaver and porcupine, in particular, which an Algonkian Indian would not throw where they could be gnawed by dogs (Beauchamp, 4:252), were here found in the refuse along with the bones of other animals.

¹Colden (I, 12) says he was told by a Mohawk sachem, "with a Kind of Pride, that a Man eats every Thing without Distinction, Bears, Cats, Dogs, Snakes, Frogs, etc, intimating that it is Womanish, to have any Delicacy in the Choice of Food."

Vegetal Foods

Agricultural products, for which there was abundant fertile land, and native wild fruits, seeds, and nuts were used as food. Implements for the cultivation of the soil, or for gathering of plant foods, were not found, unless some of the large, mattock-like antler objects, described under "Problematical Objects," were used as blades for hoes.

Although pine bark, elm bark, and partly carbonized birch bark were found, the abundance of animal bones and agricultural products suggests that the people here were never reduced to the necessity of eating bark, as among other tribes in times of famine (Parker, 2:104).

The use of wild fruits and nuts for food is suggested by the presence of fruit pits and three varieties of nuts. There is a single carbonized pit of a wild plum (*Prunus nigra*), but the fruit of another variety (*P. americanus*) was probably also used, as trees of this species, as well as *P. nigra*, are growing on the site at the present time, and both are known to be protected by modern Iroquois. There is also a pit of either the choke-cherry or wild black cherry. The nuts consist of a beechnut and a butternut, both partly carbonized, and two hazel nuts, which may be either those of *Corylus americana* or *C. rostrata*. There is a clump of the latter species at the edge of refuse deposit 1, in which the nuts were found, and so they may have been introduced into the heap recently. A seed, possibly of the vetch (*Vicia americana*), was found with the skeleton of a child (No. 46¹).

The agricultural products consist of corn, beans, squash seeds, and sunflower seeds.

Corn was here, as among the Iroquois generally, the favourite vegetal food. Carbonized parts of stalks, roots, a few ears with husks intact, and even one retaining the floss or silk, many cobs, and many loose kernels were found, the latter, especially, in nearly all of the refuse deposits, but nowhere in masses suggesting ground caches. Judging from the rounded grains, some of the corn was sweet corn and some is probably of the starchy kind called bread corn by the modern Iroquois, possibly one of the flint varieties. Some of the grains are about the size of popcorn kernels, but the tips are not pointed, so they may be end grains of other varieties. The largest grains of what is probably flint corn are about $\frac{9}{32}$ by $\frac{15}{32}$ inch in diameter, and those that are probably bread corn $\frac{7}{32}$ by $\frac{8}{32}$ inch. The cobs (Plate XVIII, figures 1 and 2) are small, the longest whole cob being only $2\frac{3}{4}$ inches long, and they vary in diameter at the base from $\frac{1}{2}$ inch to $1\frac{1}{32}$ inches.² A fragment of an ear, with part of the grains still in place, was about $1\frac{5}{16}$ inches in diameter. Most of them are oval in cross-section and a few are irregularly angular. They bore from four to twelve rows of kernels, but the majority had six, eight, ten, or twelve rows. The diameter of the cobs did not seem to bear any relation to the number of

¹See "Details of Burials", p. 118, and Map 1599.

²The cobs from the site of Hochelaga also are small, two specimens (No. 63, Gravel collection, Museum of the Canadian Antiquarian and Numismatic Society, Chateau de Ramezay, Montreal) each had four rows of kernels. Dawson (3: 157), speaking of the corn found at this site says: "I have evidence that the variety of corn cultivated at Hochelaga, three hundred years ago, was similar to one of the early varieties cultivated still in Canada." Judging from the size of the cobs found at Roebuck, Hochelaga, at Iroquois sites in New York (Harrington 4:225), and sites of other cultures in Ohio (Mills, 3:34) and Kentucky (Smith, 1: 180), all the corn grown by the Indians of north-eastern North America probably had small cobs.

rows of kernels, some of the very slender cobs having had as many as ten rows. The cobs would correspond in size with the purple, calico, and short-eared calico varieties still grown by the New York Iroquois.¹

The charred condition of the corn is due to the Iroquois custom of partly charring it for domestic use; the Seneca still kept up the practice in Morgan's time (II, page 30).

Since there were no storage pits in the ground as at some other Iroquoian sites in Ontario, the corn was probably stored in the lofts of houses, as at Hochelaga.²

Many carbonized beans were found, principally in the layer of fine carbonized matter at the bottom of several of the refuse deposits and occasionally also among the small deposits of corn kernels. They are mostly small and kidney shaped, but none is of the "cranberry" type.³ The smallest is about $\frac{7}{32}$ inch long and $\frac{1}{8}$ inch wide, and the largest $\frac{1}{2}$ inch long and $\frac{9}{32}$ inch wide. Most of them are split in half lengthwise.

Squash seeds, which, unlike the corn and beans, were not carbonized, were found in the muck surrounding the spring and in two of the refuse deposits. They are probably those of *Cucurbita polymorpha*, and closely resemble in size and shape those of the variable marrow-like form, sometimes striped, regarded as aboriginal and, according to Waugh, still cultivated by a few old Iroquois at Oneidatown and Grand River reservations, Ontario, and Tonawanda, New York, in 1912.

There were only a few sunflower seeds, all carbonized. According to Parker (2:102), sunflower oil was a favourite food-oil of the Iroquois, but it was probably mostly used on the hair (Carr, page 172, and Champlain, III, page 119).⁴

Animal Foods

Remains of animals used for food include bones of mammals, birds, reptiles, amphibians, and fish, and shells of land and freshwater mollusks.

Mammal bones were the most abundant. Many of the skulls of small mammals have the brain case broken. The following list gives the names of the mammals in order of abundance: Virginia deer, beaver, dog, black bear, raccoon,⁵ pine marten, muskrat,⁶ porcupine,⁷ otter,⁸ fisher, mink, woodchuck, varying hare, red squirrel, lynx,⁹ moose, wapiti, wolf,¹⁰ skunk,¹¹ wolverine, red fox, grey fox (*Urocyon* sp.), chipmunk, black or grey squirrel,¹²

¹See Parker, 2, Plate 9, figs 4-6, 8.

²"There are lofts in the upper part of their houses, where they store their corn" (Cartier, pp. 156-157).

³These beans were probably of the kind described by Cartier (p. 183) as "of various colors and unlike our own", grown by the Iroquois of the lower St. Lawrence.

⁴Van Curler speaks of loaves of corn meal "baked with nuts and dry blueberries and the grains of the sunflower" (Wilson, p. 91).

⁵The flesh of this animal was eaten by the Mohawk of the seventeenth century (De Vries, p. 103).

⁶Muskrat flesh was evidently relished as among modern epicures; we have Cartier's testimony to this effect (p. 147).

⁷"The Indians eat it with great relish; its flesh tastes like pork" (Loskiel, p. 84).

⁸Loskiel (p. 84) says "Its flesh is unwholesome and never eaten but in a famine."

⁹According to De Vries the Mohawk ate the flesh of wildcats (p. 94).

¹⁰A pair of lower jaws and a portion of a skull are too large to be those of a dog and may be wolf. Some of the large leg bones, referred to elsewhere as possibly those of a large variety of dog, may also be those of the wolf.

¹¹According to Waugh (p. 135) skunk flesh is eaten by the modern Iroquois. Kalm (I, 217) says: "When the Indians kill such a pole cat, they always eat its flesh." Loskiel (p. 86) says "The flesh of this animal is wholesome and well-flavored."

¹²According to Loskiel (p. 86) the flesh of the black squirrel is "eaten by the Indians in case of sickness, but not as common food."

seal (*Phoca* sp.),¹ and bison.² The bones of the deer were more numerous than those of any other mammal, and specimens of most of the bones, including even the delicate hyoids, were found. All of the skulls were broken open to get out the brains for food or for tanning, probably in some cases for both purposes. The parts of the skull mostly found were the basilar, occipital, and upper maxillaries. Many of the lower jaws are broken and many lack the articular process. Most of the leg bones are broken, and a few others have a hole broken through the wall of the largest part of the bone, probably in order to extract the marrow. Several bones, including skulls, bear knife cuts, made in cutting the meat off the bones; one of the skulls has a clean cut, perhaps made with an ax at the back of the base of each antler. All of the beaver skulls are more or less broken; most of the lower jaws have the articular condyle and coronoid process missing, and a few of them show marks of cutting. The presence of the dog bones, buried in the refuse with bones of other food animals, suggests that the flesh was used as food,³ but perhaps ceremonially only. No dog bone, however, bears knife cuts made when cutting off the meat. One of the skulls, of which four were discovered, has a large hole through the frontal bone, such as might result from the blow that killed the animal; although it may also have been broken in order to extract the brain. Although the skulls appear to belong to a small, short-faced variety of dog,⁴ some large leg bones, if they are not those of the wolf, seem to belong to a larger variety. Bear flesh was probably one of the staple foods. All of the bear skulls are broken, as are also most of the lower jaws, especially the coronoid processes and articular condyles; but none of the long bones is split for the marrow. It is possible that the people here kept bears in captivity and fattened them for their feasts, as among the Huron.⁵

Bird bones were not numerous, probably because they were eaten by dogs as they are small, easily crushed, and usually carry considerable meat; none that survived, however, shows any signs of gnawing. Some very small bones were found, one of them being a small, delicate tracheal ring. Only a few show knife cuts made in cutting up the flesh. Thirteen species of birds, mostly identified from wing and leg bones, are represented; in order of abundance they are as follows: Canada goose, ruffed grouse, sandhill crane (*Grus* sp.), loon, bald eagle,⁶ passenger pigeon, swan (*Olor* sp.), raven, herring gull, broad-winged hawk, red-shouldered hawk, pileated woodpecker,⁷ and an unidentified species of duck.

Bones of the snapping turtle, painted turtle, and wood turtle are the only reptilian remains found. The flesh of these turtles is eaten by modern Iroquois (Waugh, 136).

¹A seal phalanx is probably from an animal captured in the lower St. Lawrence, although seals are known to have ascended the river as far as Montreal (See Hall, p. 299); even their occasional occurrence in the Ottawa has been reported.

²A distal phalanx and the broken head of a scapula have been identified as possibly of this species. Bison bones were discovered at a site of the same culture as this site in Jefferson co., N. Y., and Skinner (4: 169-170) commenting on the discovery, says: "Early records of settlers in Onondaga county show that large herds of bison visited the salt-licks, near Syracuse, and a sufficient number of bones have been found near the place to justify the belief that the records are true. Beauchamp has also commented on buffalo bones from Jefferson county."

³We have abundant historical evidence of the use of dog flesh as food by the Iroquois (See Champlain III, p. 164; Jesuit Relations, VII, p. 223, IX, p. 111, X, p. 229, XIII, pp. 43, 45, 229, 235, and XLVII, p. 75; Sagard, 1: 210; and Megalopensis, p. 156).

⁴Dawson (3: 99) speaking of the Hochelagan dog, says: "The variety kept was that small breed seen among many Indian tribes, and sometimes called the fox-dog."

⁵Champlain (III, p. 164) says: "They also fatten bears, which they keep two or three years, for the purpose of their banquets." See also, Van Curler (Wilson, pp. 89, 90).

⁶According to Sagard (2: 818) the Hurons not only made soup of its flesh but also ate it.

⁷Woodpeckers are eaten by modern Iroquois (See Waugh, page 135).

The amphibian remains consist of a few bones of a frog smaller than the bull-frog and probably either the leopard or pickerel frog. Several kinds of frogs were eaten by the early Iroquois (Jesuit Relations, XXXIX, page 215), the smaller varieties being either eaten whole or used to season their sagamite (Lafitau, III, pages 91-92; Hennepin, I, page 41, and II, page 524; and Waugh, page 136).

Deposits of fish bones and scales and scattered bones were common, seven different species being represented, including yellow pickerel, common catfish, pike, buffalo fish (possibly *Ictiobus bubalus*), carp (*Carpiodes* sp.), gar pike, and chub or horned dace. There is no doubt that suckers, brook trout, and other smaller species were also used as food; and that fish of the sun-fish family were caught is suggested by the fish form seen on the pipe in Plate XVI, figure 5.

Shells of freshwater clams, of which nine species are represented, were abundant in all the refuse deposits, but none of them is now living in Indian creek nearby. Edible clams of the genus *Anodonta* that now live in the creek, were not found in the refuse. Most of the shells are in a good state of preservation, many of them still retaining the dark dermis; but those buried in ashes were always more or less burnt and very fragile. Shells of *Elliptio complanatus* were the most abundant, as many as one hundred being found in a single pile, some of them unopened. In a few instances they were mixed with carbonaceous matter, including charred corn, which suggests that the shellfish were gathered for food, other uses, mentioned elsewhere, being incidental. Some are fragmentary or have holes broken through the sides.¹ Shells of *Lampsilis siliquoidea* were next in abundance, a few of them being broken and one having a hole broken through the side. There are several broken shells of *Lampsilis ventricosus*, and another that Judge Latchford considers a deformed valve of the variety *canadensis*. *Eurynia recta* and *Lampsilis radiata* are represented by a few whole and broken shells, and *Alasmodonta undulata* by two fragments. There is a single shell of *Sphaerium striatinum*, but this species could not have been of much importance as food, as it is less than $\frac{1}{2}$ inch long. A shell of *Sphaerium simile* contained immature shells of the same species, just as they are now often found in the mud along streams. Since this shell contained no meat when brought to the refuse heap the species may not have been used as food.

Shells of six species of land snails and of two species of freshwater snails were found. The shells of the land snails bear the same appearance of age as some of the clam shells, and it is possible that they were used as food, although the snails may have crawled into the deposits recently. The following species are represented: *Anguispira alternata*, *Polygyra albolabris*, *P. dentifera*, *P. thyroides*, *P. sayana*, and what seem to be shells of *Omphalina cuprea*. A deposit of nearly one hundred shells of *Anguispira alternata* occurred in one of the refuse deposits, but the gregarious habits of this snail may account for this number. The freshwater snails include those of *Campeloma decisum* and *Helisoma campanulatum*; the latter, of doubtful food value, may have been brought here quite casually, possibly by a bird or children.

¹It is of interest to note that the shells, like those of the present day, seem to have been affected by a parasitic species of freshwater sponge (probably *Vicia*), which caused exfoliation of the sides and umbonic region.

MATERIALS FOR MANUFACTURE

For raw materials out of which to manufacture artifacts the people of this site depended on rocks, minerals, clay, and animal and vegetal materials.

Rocks, Minerals, and Clay

The rocks and minerals found here, both in a raw and manufactured state, comprise chert, chalcedony, quartz, quartz crystals, quartzite, mica, soapstone, graphite, iron pyrites, red ochre, hematite, iron ore, limestone, sandstone, slate, hornblende schist, micaceous schist, schistose slate, granite, gneiss, granite-gneiss, diabase, diorite, greenstone, basaltic rock, porphyry, claystone, and clay.

Chert, both grey and black, was rarely used, although common at Algonkian sites in the Ottawa and St. Lawrence valleys. Only six arrow-points found by us, and five by Mr. White, four scraper blades, and the large object in Plate XVII, figure 12, are chipped from this material. Besides the manufactured artifacts there are seven chips, two of which show secondary chipping. The nearest source is on Rideau lake, where Dr. T. W. Beeman of Perth found a workshop and quarry in 1891 (Boyle, 5:15). A very brittle chert, nearly black in colour, and resembling some of that found here, abounds in the limestones of the Ottawa valley.¹

What seems to be a species of whitish chalcedony was chipped into a scraper blade.

Besides a few broken, but otherwise unworked, pieces of quartz and a quartz pebble, there are fifteen quartz crystals, one of which shows a peculiar, concentric type of crystallization. They probably come from the local limestone, being found in drusy cavities in the dolomite of this formation in many places.²

Two large pieces of mica are roughly quadrangular, and a small piece, which lay on the hollow side of a pottery fragment when found, is of an irregular shape. The nearest places where this material could have been obtained in such large pieces are in the townships of North and South Crosby, South Burgess, and South Elmsley, Leeds county, and in North Elmsley and North Burgess townships, Lanark county, from about 25 to 40 miles west of Roebuck.

White, pink, green, grey, brown, and black soapstone, some of it mottled, was used as material for a large number of beads and for two pipes. Besides these objects there are three worked pieces that have no definite form. The nearest source is in Leeds county, about 30 miles distant.

There are seven pieces of graphite. If not brought hither in the drift, the nearest sources of this material are in Darling and North Burgess townships, Lanark county, and North and South Crosby townships, Leeds county, the first about 25 miles, and the last about 40 miles, away.

No copper or artifacts made of it were found, although it is probable that, like the people of Hochelaga³ and Stadacona,⁴ the Roebuck people

¹See Geol. Surv., Canada, Ann. Rept. 1863, p. 628; also, Wintemberg, (4: 136).

²Geol. Surv., Canada, Ann. Rept. 1863, p. 500.

³See Cartier's narrative, p. 171. According to Lighthall (1: 201) copper axes have "been found in the debris of Hochelaga."

⁴The people of Stadacona, among other gifts, gave their chief Donnacona, before his enforced departure for France, "a large copper knife from the Saguenay" (Cartier, p. 233).

were acquainted with the metal. What were described as awls made of brass, but which may have been of native copper, were found at a site of the same culture, about 6 miles east of Roebuck.

Other mineral substances comprise twelve pieces of iron pyrites, three of which are oxidized, three of red ochre, and three of iron ore, the last three probably being used in the manufacture of paint. Iron pyrites and hematite occur in the counties of Leeds and Lanark, from about 25 to 50 miles west of Roebuck.

Hornblende schist seems to have been the favourite material for adzes, as forty-four blades were made of it, besides two objects like those in Plate XIV, figure 19. Other materials made into adzes consist of quartzite, micaceous schist, schistose slate, granite, granite-gneiss, diabase, greenstone, and a species of basalt.

Suitably shaped cobbles of quartzite, limestone, sandstone, micaceous schist, granite, gneiss, granite-gneiss, diabase, diorite, greenstone, and porphyry, from the drift, were made into mullers and hammers; and flat slabs of quartzite, limestone (probably all from local outcrops), sandstone, granite, gneiss, and granite-gneiss, had one or both flat surfaces hollowed for use as mortars.

Crushed gneiss and, in a few cases, crushed quartzite were used as tempering material in pottery.

Limestone was fashioned into beads, disks, whetstones, and the object in Plate XVII, figure 17. Besides the uses mentioned above, sandstone was made into whetstones, discoidal beads, the marked stone object in Plate XVII, figure 19, and an implement of the same type as that seen in Plate XIV, figure 19.

Grey and red slate furnished material for two roughly chipped spear-like objects (Plate I, figures 6 and 7); two whetstones; a so-called slickstone (text Figure 3); a few beads; a disk; a gorget and what are probably unfinished articles of this class; and the broken pipe in Plate XV, figure 47. There are also several slightly worked pieces.

One of the claystone or clay concretions was used as a whetstone, one may have been regarded as a fetish, and another was used for some other purpose.

Clay, which was mostly combined with tempering material, was extensively used in the manufacture of pottery, pipes, beads, the small human figurine in Plate XV, figure 30, and the little human head in figure 31 in the same plate, the curious objects in Plate XVII, figures 15 and 16, and the spoon-like object in Plate II, figure 3. Lumps of blue clay, of unknown source, found in one of the refuse deposits, may have been of the kind used in the manufacture of pottery objects. Clay was probably obtained from a clay bed on the bank of Indian creek, a few hundred yards west of the site. Broken pottery was used in the manufacture of disks, a bead, and the object in Plate XVII, figure 20.

Animal Materials

As is to be expected of a people who depended in part on the products of the chase, many of their artifacts are derived from animal materials consisting of bones, antlers, teeth, and shells. The skins of some of the animals, no doubt, were made into garments and other articles, the brains

were probably used in tanning, and the sinews as thread in sewing. The feathers of certain birds were no doubt used to feather arrows, and others may have been used to ornament clothing and headdresses.

Bone. This material, consisting of bones of mammals, birds, reptiles, and fish, was most extensively used.

More deer bones than those of any other mammal were used. More than fifteen hundred artifacts are made of deer bones and there are about five hundred others that are probably derived from bones of this animal. Many of the bones are broken and others are split lengthwise, some of the pieces being of a size and shape suitable for manufacturing into artifacts. Most of the split pieces are parts of metapodials and tibiae. In spite of the fact that the deep grooves on the front and back of the metatarsals would permit the bone to be easily broken into long, narrow pieces, very few were split along these grooves. It is uncertain of what particular bone some of the objects are derived, a few of them being merely rough, broken pieces worn with use. A periotic bone may have been worn as a pendant or a charm. Some of the lower jaws may have been used for scraping corn from the cob. The anterior part of a jaw was made into a point for an arrow. Eight others appear to be in process of manufacture into points, for three of them have the rough symphysis smoothed; four, including those just mentioned, have the alveolar edge smoothed, either by removing or breaking off the teeth and grinding the edge until smooth; one has part of the outside surface and another both outside and inside surfaces flattened by grinding. The anterior part of two jaws and the basal portion of two others were made into awls. Sixteen scapulæ were made into pipes (Plate XV, figure 39) and thirteen others are in process of manufacture into pipes. No artifacts made of the humeri were found, but the head of one, severed from the shaft by scoring and breaking, suggests that these bones were used for some purpose. Thirteen ulnæ were made into awls, and one has the styloid end brought to an obtuse point. Parts of thirteen radii were made into awls; seven others, as mentioned under tanning, have the sides polished from use; and one is a proximal joint severed by scoring and breaking, the shaft probably having been worked into artifacts. Five hundred and twenty-eight metapodials were worked up into awls (Plate XIV, figures 26, 29, 32); three were made into harpoon points (Plate I, figures 22, 24, 27); and several others were transformed into artifacts of unknown use (Plate XVII, figure 5). Several ribs, probably of this mammal, were worked, and what seems to be parts of others were made into perforated, needle-like tools. Part of the proximal end of a femur was cut into a blank preparatory to making a fish-hook, and there are two distal ends, the shafts of which were probably transformed into such hooks or other artifacts. Parts of forty-six tibiae were made into awls; sections of the front wall of two others are blanks for fish-hooks, one of which is Cat. No. VIII-F-11478 and the other illustrated in Plate I, figure 28; and there is a distal joint of another that had been cut from the shaft. Nine splint bones were made into awls. Eighty-two proximal and middle phalanges were made into what are probably units for cup and pin games (Plate XV, figures 19-23), and two hundred and ninety others have been transformed into flattened objects of unknown use (Plate XV, figures 24-29).

In comparison with the small number of bones of the animal actually found, there seems to have been a more or less extensive use of bear bones. One of the skulls, with the upper part of the brain case broken away, was afterwards used in such a way as to wear down and smooth the surface near the fractured edge. A right lower jaw, retaining the canine tooth, has the articular condyle and coronoid removed by scoring and breaking, but for what purpose is not apparent, unless, as the polish on the inside surface suggests, it was used as some sort of tool. Another right lower jaw has the articular part broken off and a deep V-shaped notch or cut near the canine tooth, the purpose of which also is uncertain, unless it was the intention to cut off this portion to facilitate removal of the tooth. A right lower jaw was made into the tool seen in Plate XVII, figure 18. All the larger limb bones seem to have been used in the manufacture of artifacts. Four distal ends of humeri have been severed from the shaft by scoring and breaking and three blanks in process of manufacture into fish-hooks appear to be derived from the thick part of the bone bearing the deltoid ridge. An ulna was made into a punch-like tool (Plate XIV, figure 25) and another into a dagger-like object (Plate XVII, figure 28); there are also two proximal ends cut from shafts. There are two distal ends of femora cut from shafts and a tibia with both ends removed. One of the fibulæ has both ends cut off; another was transformed into an arrow-point; and what appear to be fibulæ of young bears were made into awls. The claws may have been made into ornaments as among other Indians.

Extensive use was made of certain bones of the dog. Two right lower jaws have the ramus removed by scoring and breaking. Three proximal joints of humeri, severed from the shaft by scoring and breaking, and the shaft of another with the proximal joint similarly removed, suggest that the shafts of these bones were transformed into beads. Two ulnæ were made into points for arrows; four were transformed into awls; and the styloid end of another was made into a spatulate implement (Plate XVII, figure 3); there are also two proximal ends cut from ulnæ. Two radii were made into awls; one was made into an arrow point; six have both ends cut off; four others consist of proximal joints severed from the shafts by scoring and breaking; and another is a short section cut from the shaft. The shafts of two femora were cut into bead-like objects; there is also a shaft with one end cut off and two others with both ends cut off, and one cut distal end. Four tibiæ were made into points for arrows (Plate I, figure 14); two others with the proximal joint cut off are probably unfinished arrow-points; and seven proximal joints and one distal joint are no doubt from shafts that had been made into similar points. A metacarpus or metatarsus has the proximal joint cut off, but it is not certain what kinds of artifacts were made of these bones.

Even human bones were used as material for artifacts, three awl-like objects (Plate XIV, figure 24) being made from ulnæ; eight gorgets from pieces of skull (Plate XV, figures 32, 33); and a bead-like object from a fibula. Besides the finished artifacts, there are several broken pieces of skull apparently in process of manufacture into gorgets, two ulnæ with the distal ends cut off, and three radii and one fibula with both ends cut off (Plate XVII, figure 21).

An ulna and five fibulæ of the lynx; six ulnæ, a radius and two splanchnic bones of the raccoon; and two styloid ends of ulnæ and five splint bones of the moose or wapiti (Plate XIV, figure 22) were made into awls. There is also a worked portion of the lower jaw of a wapiti. Bones of the beaver seem to have been seldom used, a fibula made into an awl, a polished ulna and femur, a lower jaw, and a radius with one end cut off, being the only specimens showing artificial modification. The polish on a humerus and on four metacarpals or metatarsals of the hare (the latter were found in a clam shell), suggests that they were used for some special purpose.

Besides the animal bones, made into artifacts, which have been identified, there are a few split bones and several unfinished and finished artifacts derived from bones of unidentified mammals. The latter include the notched piece of rib seen in Plate XVII, figure 14; several crude, slightly worked tools; pieces of ribs and other bones, which have been made into needle-like tools; two femora and a humerus of three different species of mammals, in process of manufacture into beads; two tibiæ with the proximal ends cut off, which are probably unfinished points for arrows, like those made of dog tibiæ; another bone with both ends removed by scoring and breaking; and a harpoon point apparently made from the bone of a sea mammal (Plate I, figure 20).

Bird bones were not extensively used. A few humeri, ulnæ, radii, metacarpi, femora, and tibiotarsi of the Canada goose, swan, loon, and unidentified species of birds were made into points for arrows, awls, a spatulate object, a gouge-like tool, and many cylindrical beads (Plate XV, figure 11). The ulnæ, especially those of the Canada goose, which are more or less round in cross-section, were the favourite material for beads. Among the rejects of manufacture are a few broken and split bones, two proximal and one distal joint of humeri of the Canada goose, and proximal joints of the same kind of bone of the loon and swan, all of which were severed from the shaft by scoring and breaking. A tibiotarsus of the Canada goose is highly polished, but it is uncertain for what purpose it was used.

Only a perforated section of the bridge portion from a plastron of the painted turtle suggests that turtle bones were used for artifacts.

The only fish bones that have been made into artifacts are the dorsal and pectoral spines of the common catfish, an unidentified bone (Plate I, figure 11) made into what seems to have been an arrow-point, and what appears to be the branchiostegal of another species, which has been transformed into a needle-like tool.

Antler. Most of this material used in the manufacture of artifacts comes from the deer, at least none of it can be recognized as moose or wapiti antler, although bones of both animals were found. The handle in Plate XIV, figure 8, seems to be made from part of a caribou antler. There are a few unworked antlers, many partly worked pieces, especially tines, the latter probably mostly in process of manufacture into points for arrows, and one hundred and twenty-two artifacts, consisting of fifty-two

points for arrows (Plate I, figures 15-18); two unilaterally barbed harpoon points (Plate I, figure 25); the broken, perhaps unfinished, artifact in Plate XVII, figure 13; seven chisels or wedges (Plate XIV, figure 5); twenty-one handles (Plate XIV, figures 6-10); a comb (Plate XV, figure 1), and what may be a fragment of another (Plate XVII, figure 8); thirteen mattock-like tools (Plate XVII, figures 22, 23); seventeen perforated tools (Plate XVII, figures 6, 25-27); four punch-like objects; part of a polished implement; a carved piece (Cat. No. VIII-F-10193); and a carved, phallus-like object (Plate XVII, figure 24).

Teeth. Beaver, porcupine, woodchuck, bear, dog, wapiti, and raccoon teeth were used as material for artifacts.

Incisor teeth of the beaver were the most extensively used; out of the one hundred worked or artificially modified beaver incisors discovered, eighteen appear to have been used as chisels (Plate XIV, figure 1), forty-three have been transformed into knife blades, eighteen are partly rubbed into such knife blades, and twenty others are split lengthwise in preparation for grinding. Both upper and lower incisors were used, the lower, however, more often than the upper. Only two incisor teeth were found in place in the lower jaws and they are lacking in all the skulls, although the molar teeth are intact in both upper and lower jaws.

There are sixteen incisor teeth of the porcupine, upper and lower; six are unmodified, six have been fashioned into knife blades, and three others partly shaped for the same purpose, and one has been split lengthwise but not ground. Only one of the lower jaws retains an incisor tooth.

One incisor tooth of the woodchuck has been made into a knife blade, and two others are partly ground. Two of the lower jaws retain the incisors.

Fourteen canines of the bear were made into what were probably knife blades (Plate XIV, figures 2, 3); one is in process of manufacture into such a blade; three were transformed into pendant ornaments (Plate XV, figures 2, 3); four have the enamelled end broken off for some purpose; one had this end ground down at a slant, and another has the tip ground off and polished (Plate XIV, figure 4). None of the molars was artificially modified, like some from Iroquoian sites in New York, illustrated by Parker (4: Figure 12, 3 and 4; and 6: Plate 36, figure 1). As only two canines remained intact in the lower jaws they were probably mostly extracted for use as material. Many teeth are unworked. A fragment of the left side of the muzzle of one of the skull fragments has the bone on the side of the nares cut off, possibly in order to facilitate the removal of the canine tooth, which is still in place.

Two canine teeth of the dog were the only artificially modified teeth of this animal found, one having been made into a bead and the other into some sort of tool (Plate XVII, figure 10).

A canine of a raccoon has the root end notched for the attachment of a cord, probably for suspension as an ornament.

A wapiti tooth was perforated for use as a pendant (Plate XV, figure 4).

Guest (page 273, Figure 3) describes and illustrates part of a perforated object made from what he thought was the tusk of a walrus. Although a

walrus tusk was found at Balsam lake, Victoria country, Ontario, it seems more probable, judging from his illustration of the object, that it was part of one of the large, perforated antler objects, like those described under "Problematical Objects."

Shell. Shells were not so extensively used as material as at other Iroquoian sites in Ontario. No shell was used as tempering material in pottery; in fact shell tempering is rarely used at Iroquoian sites elsewhere in Ontario. Although many shells of the freshwater clam *Elliptio complanatus* were found, comparatively few have the edges worn from use. Others have holes broken through the sides, a few have the sides and umbo flattened either by rubbing or from use in some smoothing operation, and one was used as a receptacle for paint. The anterior end of a shell of *Eurynia recta* is worn from use as a scraper and a shell of *Lampsilis siliquoidea* has a large hole broken through the side. Two shells of *Campeloma decisum*, a freshwater snail, were pierced for use as beads or pendants (Plate XV, figure 8). The use of marine shell was not extensive, only an unworked fragment of the shell of a quahog (*Venus mercenaria*), two worked pieces, one of them cut from the lip of a conch, and six beads made from the columella of conch shells (Plate XV, figures 9, 10), being found.

Plant Materials

The use of plant materials such as wood, bark, and fibres is suggested by some of the material found.

Wood. Charcoal, some of which may have been used as material for paint, was abundant in the refuse. No doubt every kind of wood available was used for fuel. That the posts of the palisade and the framework of the houses, bows, the shafts of arrows, and handles for tools were made of wood can be inferred. Possibly dugout canoes were made by hollowing trunks of trees. Only two wooden artifacts were actually found at the site. One of them is the perforated disk in Plate XVII, figure 11, which was found in the muck surrounding the spring and preserved by being continuously wet, and the other is the small, buttonlike object illustrated in Plate XVIII, figure 4. A few pieces of wood show cuts made with an ax. The small wooden cup seen in text Figure 4 is said to have been found in a grave at the site.

Bark. Part of what appears to have been a receptacle of birch bark (Plate XVIII, figure 3) was found near the perforated wooden disk in the spring, and a closely coiled carbonized roll of the same kind of bark as mentioned on page 91 may have been a torch. That bark was used for other purposes is suggested by the discovery of the carbonized fragment of a rope twisted from pieces of flat bark (Plate XVIII, figure 5).

Fibres. There is evidence that vegetal fibres were twisted into cords and woven into bags (Plate XVIII, figure 6), but it is not certain from what plants the fibres were derived, although they may either be hemp¹ or the inner bark of the basswood.

¹Kalm (I, p. 412) says the Iroquois used fibres derived from the Indian hemp (*Apocynum cannabinum*).

SECURING OF FOOD

Artifacts used in securing food consist of those employed in hunting and fishing, and comprise stone, bone, and antler points for arrows, bone and antler points for harpoons, probable bone barbs for fish-hooks and spears, and barbed bone fish-hooks. Other objects may have been used in cultivating the soil and in gathering and preparing the crop.

Besides the arrow-points made of stone, bone, and antler it is probable that blunt wooden arrows were used to stun small game, as among the modern Iroquois.¹

POINTS FOR ARROWS, SPEARS, OR KNIVES CHIPPED FROM STONE

Only six stone points for arrows and two possible points for spears or knives were found by us; four others were collected by Mr. White, the owner of one of the farms on which the site is located. It is not probable that the large points were intended for spears, because the Iroquois of the St. Lawrence valley do not seem to have used spears; at least, Cartier's vocabulary of Hochelagan and other Iroquois words (pages 243-244), does not give one for spear.

The arrow-points are of two types—triangular and notched (*See Plate I, figures 1-3*). Only a few require any special description. One of the points is triangular (Cat. No. VIII-F-12288), and another in Mr. White's collection is crudely triangular with concave base. The specimen in figures 1 and 2 and one of Mr. White's are only slightly notched. The edges of the tangs on the point in figure 3 are almost at a right angle to the basal edge, and in this respect the point resembles a type, developed apparently from a triangular point by simply notching the edges, that is commonly found at Neutral sites in the western part of southern Ontario (*See author, 1, figure 8*). Only about half of the face seen in the illustration shows secondary chipping. The blade is slightly twisted as in some of the so-called "rotary" points. One of the specimens in Mr. White's collection is of the same type. Another notched specimen in the same collection is about twice as long as wide, and has convex edges and base.

The crests of the chipping facets on the tanged point illustrated in Plate I, figure 4, look worn, as if from long use. It seems too heavy for an arrow-head, and may have been the blade of a knife or spear. Both edges of the long point in figure 5 are more or less delicately chipped; the sharp edges and length of the point suggest that it was used as a knife blade. Figure 6 shows a large point, crudely chipped from a weathered or waterworn piece of slate. The length of the stem on the crudely chipped slate specimen in figure 7 suggests that it is an unfinished knife blade.

Although so few projectile points, chipped from stone, were found here, they are said to have been common at a site of the same culture near Maynard, about 6 miles south of Roebuck. They are also common on Algonkian sites in the St. Lawrence valley. According to Dawson (1:437) no points for arrows were discovered at the site of Hochelaga,² and the

¹Beauchamp (6: 123) thinks "The small number of arrowheads found on Iroquois town sites of the last 500 years supports" the antiquity of the use of blunt wooden arrows.

²An arrow-head in the Dawson collection in the McCord Museum, Montreal (Acc. No. 4295) and another in the Gravel collection (No. 58), Museum of the Canadian Antiquarian and Numismatic Society, Montreal, however, may be from the site.

writer found only a few at a site near Lanoraie, about 40 miles east of Montreal. They are also scarce at other sites of the Mohawk-Onondaga group in eastern Ontario, Quebec, and New York. Very few have been found at Onondaga sites in Jefferson county, New York (Harrington, 5:329, 335); one site near Black river yielded only seven points, all but one of the triangular type (Skinner, 4:165). Very few, also, have been found at pre-European Huron sites in Victoria county, but they are more common at Neutral sites in southwestern Ontario.

SIMPLE BONE POINTS FOR ARROWS

These consist of twenty-seven objects of bone pointed at one end and with either a wedge-shaped, obtusely pointed, or notched base. Plate I, figures 8-10 and 19, shows a few specimens, which although they may have served as awls or punches, represent those about which there is the least doubt as to their use also as projectile points. One, not illustrated (Cat. No. VIII-F-10845j), made from a splinter, has a wedge-shaped base, which could readily be inserted in the cleft end of an arrow-shaft. The shape of the butt of another specimen (Cat. No. VIII-F-11748) likewise suggests that it was possibly a point for an arrow and intended to be fastened in the same manner as the one just described. The tip of a shorter and more slender specimen than the last (Cat. No. VIII-F-11969) seems almost too delicate for use as a projectile point, except possibly for the shooting of birds. The double-pointed specimen in Plate I, figure 8, is the largest one from the site. The symmetrically proportioned specimen in Plate I, figure 9, has the basal half roughened, probably to hold the lashing that kept the point in place in the shaft. Figure 19 shows a specimen that is much expanded near the middle. Only two of the specimens are notched to facilitate their attachment to the arrow shaft. One of these, which is shown in Plate I, figure 10, retains the marrow hollow of the bone on one face. The short incised lines near the left edge probably have no significance, although they may be tally marks. There can be no doubt as to the purpose of a much smaller point with two notches on each edge (Cat. No. VIII-F-9453). Its sides have been rubbed down even and sloping toward the base, so that it is wedge-shaped as seen in profile.

The specimen with a single barb-like shoulder on one edge, seen in Plate I, figure 13, may also have been a point for an arrow.

No arrow-heads fashioned from distal phalanges of the deer, similar to those found at the Baum village site in Ohio (Mills, 3:53, and Figure 36), were found here.

HOLLOW BONE POINTS FOR ARROWS

There are forty-eight points made by cutting off the joints at each end of a hollow animal bone, bringing one end to a sharp point, and in some cases barbing by hollowing the base; another specimen is in Mr. White's collection.

Twenty-nine, or about 62 per cent of the total number found, are whole or nearly whole; fifteen of the broken specimens have the tips missing, and five others have part of the butt missing. Five of the specimens are probably derived from bird bones, three apparently being humeri,

and forty-three others are made of mammal bones, sixteen of them apparently being derived from radii, two from ulnæ, two from fibulæ, five from tibiæ, and one from part of a lower jaw. They range in length from $1\frac{3}{16}$ inches to $6\frac{1}{4}$ inches, the most usual lengths being from $2\frac{3}{8}$ to $3\frac{5}{16}$ inches. The diameter varies from $\frac{3}{16}$ to $\frac{5}{8}$ inch. The marrow cavity in all specimens was exposed in producing the pointed tip. The cross-section of the different specimens varies, of course, with the particular bone from which the point is derived; those from humeri, ulnæ, and radii being somewhat oval, whereas those from tibiæ—with their three borders—and fibulæ, are more or less triangular. Seventeen specimens are crude, thirty-four have the base cut off more or less squarely; and two are cut off obliquely. Six have the base indented, producing two barbs, and two others have three barbs. Seven specimens have the marrow hollow at the butt end artificially enlarged for the reception of the arrow-shaft.

One point (Cat. No. VIII-F-10212) is made from that part of the lower jaw of the deer lying between the incisor and molar teeth, known as the diestema. The butt is cut crudely and more or less squarely across, retaining part of one of the alveolæ, and the tip shows signs of whittling, which suggests that this point is unfinished.

One of the more slender points of this type found here (Cat. No. VIII-F-12196), which appears to have been made from the tibia of a small mammal, has the marrow hollow at the base enlarged for the reception of the arrow-shaft. Another point (Cat. No. VIII-F-11225), made of a section of the triangular shaft of the fibula of a bear, has the socket hole similarly artificially enlarged to a depth of about $\frac{1}{4}$ inch.

Four specimens, one of which is seen in Plate I, figure 14, are made from the upper portion of dog tibiæ. One (Cat. No. VIII-F-12968), derived from a right tibia, has the base cut off obliquely and the other end brought to a point. The one in figure 14 is made from a left tibia and has the three sides of the base indented, producing distinct barbs. The natural angles of the bone have been considerably accentuated by grinding, making the cross-section, as seen from the base, distinctly triangular. A broken specimen (Cat. No. VIII-F-10812), probably an unfinished point, derived from the middle part of the shaft, has three blunt barbs formed by deep V-shaped notches in the base. Another specimen, with the base unfinished, is derived from the upper portion of a left tibia and is one of the heaviest specimens of the kind found here.

A point with a deep, indented base (Cat. No. VIII-F-10347), seems to be derived from the radius of a dog, and another (Cat. No. VIII-F-11229) is derived from the right ulna of that mammal. The articular end of the latter specimen was cut off at the lesser sigmoid cavity, the distal end was ground to a point; and it was barbed by indenting the base. A similar point, made from the same kind of bone, has most of the distinguishing features of the natural bone obliterated. Both points retain the natural twist of the ulna, which perhaps gave the arrow a revolving motion. It is difficult to determine the kind of bone from which the largest point (Cat. No. VIII-F-13185) is derived, but judging from its slenderness and length it seems to be part of a fibula. The base is cut off at a slight slant.

Similar points made from hollow bones have been found at other sites of the same culture in the St. Lawrence valley. Skinner describes and

illustrates several from an Onondaga site in Jefferson county, New York (4:128, and Plate XXIII, figures *b-e*), and another from the same county is figured by Beauchamp (4, Figure 12). A fragment of a point, apparently made from part of a raccoon femur, was found at the site of Hochelaga. These points also occur at early Huron sites in Bexley, Eldon, and Fenelon townships, Victoria county, and at Neutral Indian sites in the counties of Waterloo and Elgin (See author, 9, Plate XV, figure 2).

The method of manufacturing these arrow-points is suggested by a number of specimens. There are several bones unworked and others, especially heads of dog tibiae, with the lower part of the shaft severed by scoring and breaking. The butt was smoothed and the smaller end was pointed by rubbing on abrasive stones, and in some cases the angles of the natural borders of those derived from tibiae were accentuated by grinding. Barbs were produced by hollowing the base.

CONE-SHAPED ANTLER POINTS FOR ARROWS

Forty-seven points for arrows are made from antler tines. Most of them are whole. They range in length from $1\frac{1}{8}$ to $4\frac{1}{8}$ inches, the majority of them being from $1\frac{7}{8}$ to $3\frac{7}{8}$ inches long. The diameter of the base varies from $\frac{3}{8}$ to $\frac{3}{4}$ inch. The depth of the socket holes, which are round or oval in cross-section, and more or less conical, varies from $\frac{5}{16}$ inch to $1\frac{3}{4}$ inches and from $\frac{1}{4}$ to $\frac{5}{8}$ inch in diameter.

The points are round (Plate I, figures 15 and 17), oval (Plate I, figure 18), square, lozenge-shaped, and hexagonal in cross-section, but most of them are round and oval. The tip of about half the points is sharp; one is wedge-shaped; and that of another specimen is diamond-shaped. About half of the specimens have the base cut off squarely (Plate I, figure 17); a few are cut off at a slant; and others have the base indented, producing two moderately sharp barbs (Plate I, figure 18). The one in Plate I, figure 15, has four barbs formed by cutting deep, V-shaped notches into the base. There is a shallow groove around the butt end of the specimen in Plate I, figure 17. Some of the points are polished. A few are burnt, perhaps intentionally to harden them.

Arrow-points of the same type and material occur at other sites of the same culture in Quebec (Dawson, 1, Figure 14), New York (Beauchamp, 4, Figures 4, 311, 314), and Vermont (Perkins, 3, Plate XXXIV), at early Huron and Neutral sites in Ontario (author, 8, Plate I, figures 16 to 18), and at Erie (Parker, 1, Plate 35, figure 8) and Seneca sites in New York (Beauchamp, 4, Figure 323). They are also found at sites of other cultures in the United States.

The manufacture of these arrow-points can be illustrated by unworked and partly worked pieces, by tines that have been severed from beams either by breaking, hacking and breaking, or scoring and breaking, by partly completed, and by finished, points. After being severed from the beam, the larger end of the tine was carefully whittled and afterwards rubbed into the desired shape, the socket hole was excavated, and the tip was whittled and ground to a sharp point. Evidences of other processes can still be seen on some of the apparently finished points. Thus a number show traces of the scraping that was in some cases necessary to reduce

the point to symmetrical proportions; others show rubbing and polishing. The shallow groove around the basal end of the point in Plate I, figure 17, may have been the beginning of the work of reducing the thickness of this part of the point, with the intention, perhaps, of producing a flaring base. The fact that some of the points are warped suggests that the tines from which they were derived were originally bent. It is possible that in order to save the labour of straightening the bent tines by whittling they were softened by immersing in boiling water and then straightened.

BONE AND ANTLER POINTS WITH CHANNELLED BASAL ENDS

Three bone and antler points with channelled basal ends for insertion in arrow-shafts were found. The upper end of the bone point in Plate I, figure 11, is spatulate and the basal portion is shaped like the tail of a fish. The butt is wedge-like and bears a longitudinal groove about $\frac{5}{8}$ inch long, which was probably intended as a seat for one side of the cleft end of the arrow-shaft. It is about $\frac{1}{8}$ inch thick. There is a similar specimen from a Huron site in Simcoe county in the Taché collection, Laval University, Quebec.

Plate I, figure 16, illustrates a smaller specimen of a different shape, made of antler. The tip is missing. The base is indented and both faces bear channels or longitudinal grooves about $\frac{3}{4}$ inch long and $\frac{1}{16}$ inch deep, to facilitate insertion into the split end of the arrow-shaft. It is about $\frac{3}{16}$ inch thick. The third specimen (Cat. No. VIII-F-11603) is irregularly shaped and narrower than the one just described. It is grooved on both faces; the groove on one face is about $\frac{7}{8}$ inch long and about $\frac{1}{32}$ inch deep, and that on the other face is of about the same depth but is only about $\frac{3}{4}$ inch long.

These two points are almost unique among Iroquoian artifacts made of this material; the writer knows of only three other specimens.

BARBS FOR FISH SPEARS MADE OF BONE

Seventeen of the total number of specimens considered as pointed, awl-like implements may possibly have been barbs for fish spears. The specimens illustrated in Plate I, figures 9, 13, 19, described above as possible points for arrows, may likewise have been barbs, possibly being lashed to the flexible outer prongs of the trident type of fish spear, described by Le Jeune in the *Jesuit Relations* (VI, 311) and also figured and described by Boas in his "Central Eskimo" (Figures 453 *a* and *b*, and page 514). Three other bone specimens are of a different type and seem better adapted as barbs for three-pronged spears than those just described. The bevelled butt of one specimen with a moderately sharp point, if lashed to the outer prongs, would allow the barb to project at an angle of about 30 degrees; or, in other words, the tip would project an inch beyond the side of the prong. This specimen is made from a piece of the front part of a deer's metacarpus and retains the marrow hollow of the bone on one side. An obtusely pointed specimen (Cat. No. VIII-F-9993*a*) with one face of the basal end ground down at a slant, would also have been suitable for the purpose. This bevel, if the specimen were fastened to a shaft, would make the barb project at an angle of about 20 degrees, with the tip

about $\frac{3}{4}$ inch from the prong. Both edges of the basal end are rubbed down obliquely, reducing the transverse width of the butt to $\frac{1}{4}$ inch. The general shape of the bone specimen in Plate I, figure 12, likewise suggests that it was used as a barb. The basal end retains the slight bend of the natural bone, with the face not seen in the figure rubbed down sufficiently to make the barb, if fastened to a shaft, project at an angle of about 20 degrees. The whole specimen is more or less discoloured by fire. The tips of these specimens are not very sharp, but they would have been sufficiently so to prevent the escape of a fish impaled on the sharp central prong of the spear.

It is possible, if the inhabitants of this site used the three-pronged type of fish spear, that some of the long, pointed bone specimens, such as the one in Plate I, figure 8, were used as central points or prongs.

UNILATERALLY BARBED BONE AND ANTLER HARPOON POINTS

All but one of the four unilaterally barbed harpoon points found here are broken (*See* Plate I, figures 20, 21, 25). One of the points is made of antler (figure 25) and the others are of bone; one (figure 20) is derived apparently from the bone of a large sea mammal. The specimen shown in figure 21 retains the marrow hollow, and its point, which appears to be unfinished, was probably broken in the making. Two of the points had a single barb (figure 25) and the others (figures 20 and 21) several barbs, most of them being blunt. Those on the one in figure 20 were produced by deep, oblique, V-shaped notches, the tip of each barb projecting only slightly beyond the edge. The cross-section of the points varies—that of the one in figure 25 being oblong, that of the one in figure 20 half-round, and that of the one in figure 21 concavo-convex. The barbed edge of the point in figure 20 is distinctly keeled to within about an inch of the base, whereas the other edge is keeled for only about a third of its length. The points vary in thickness from about $\frac{3}{16}$ inch, as in those in figures 21 and 25, to $\frac{1}{2}$ inch, as in the point in figure 20. Only the point in figure 20 has a line hole, and this shows signs of wearing on the edges, probably from the chafing of the line that secured it to the spear shaft. The point in figure 25, which shows evidence of having been refashioned from a larger broken point, also seems to have been perforated, as part of a hole can be seen on the basal edge. The thickness of the basal portion of this point has been reduced, by cutting or rubbing, from $\frac{3}{16}$ inch to about $\frac{1}{8}$ inch, leaving a slight shoulder about $\frac{1}{2}$ inch from the base, which was probably intended to facilitate attachment to the shaft. The base of the point in figure 20 is blunt; a small part of it is missing.

A few other broken antler objects, pierced with a hole, may be parts of harpoon points.

The multiple-barbed harpoon points are similar to some of those found at other Iroquoian sites in Ontario.¹ Single-barbed points, like that in figure 25, are less common at pre-European sites than those with multiple barbs, but they are abundant at later sites.² Unilaterally barbed points also occur at Iroquoian sites in New York.³

¹*See* Wintemberg, 2, figs. 8, 15, 19, 22, 23, and 25-29, showing specimens from pre- and post-European Huron sites in Simcoe, York, and Victoria counties.

²*Ibid.*, figs. 3, 4, 7, and 9-14, showing specimens from post-European Neutral sites in Brant and Wentworth counties.

³*See* Beauchamp, 4, figs. 234, 238, 242-245, 254, 259, 329, and 354; and Parker, 6, fig. 57, and Plate 128, figs. 6-9.

BILATERALLY BARBED BONE HARPOON POINTS

Fifteen bilaterally barbed harpoon points were found (*See* Plate I, figures 22, 23, 24, 26, 27). Twelve of them are broken and four have been scorched, but whether accidentally, or intentionally to harden them, is uncertain. That four of the points are unfinished is suggested by the marks of cutting still to be seen on the sides and edges (figure 27), the irregular shape, unsmoothed appearance, and thickened butts of others, and the fact that one point retains part of the joint (figure 22). Only a few are smoothed and polished. Two are derived from the front wall and three others from the back wall of metapodial bones of the deer, the latter retaining the natural, longitudinal hollow (figures 22 and 27); another (figure 24) seems to be made from the side wall of the same kind of bone; and two are derived from parts of deer tibiae. The rest of the points are probably also derived from deer bones. A few show the cancellated part of the bone. Many points have blunt tips. The shape of their cross-section depends on the kind of bone from which they are derived or the degree of artificial modification, those retaining the marrow hollow of the bone being concavo-convex, whereas the smoothly finished specimens are round, half round, and oval. Some of the points are symmetrical; the one in figure 24 has the edges parallel for over two-thirds of its entire length; others (figure 27) are not symmetrical. The bases of only two of the whole specimens (figures 24 and 27) have been made to fit into the socket in the spear shaft; the basal edge of another has been chipped, possibly in preparation for grinding to a wedge shape. The point in figure 23 has two deep notches on the basal portion, probably for the attachment of the cord by which it was secured to the shaft. The barbs, which are mostly opposite each other, were made by oblique notches, the axils being acute. Some of them are crudely made. The number of barbs varies, three specimens having one barb (figure 27); two, two barbs; five, three barbs (figures 24 and 26); three, four barbs; one, three barbs on one edge and four on the other (figure 22); and another, one barb on one edge and eight others in four groups of two barbs on the other (figure 23). The three whole specimens are $3\frac{5}{16}$, $4\frac{3}{4}$, and 7 inches long, respectively. They are $\frac{1}{8}$ to $\frac{5}{16}$ inch thick. None of them is perforated, in fact very few found at Iroquoian sites elsewhere have holes (Rau, page 150, and Beauchamp, 4:294). The shape of the point in figure 23 suggests that it may have been brought from the Atlantic coast, where similar specimens have been found (Compare with Smith, 3, Plate VI, figure 9).

The fact that here, as well as at Iroquoian sites elsewhere in Ontario (author, 2:48) and New York, so many of the points are broken would suggest that these specimens may have been points for arrows rather than harpoons, or they may have served as terminal or central prongs of the trident type of spear, as in three Eskimo specimens in the National Museum of Canada (*See* Cadzow, Plate II, figure b).

Points of the same type as some of those described above have been found at other Iroquoian sites in Ontario (*See* author, 2, Figures 34, 35, 37-39), at the site of Hochelaga (Dawson, 2, Figure 4), in New York

(Beauchamp, 4, Figures 231-233 and others; Skinner, 4, Plate XXIV, figures *b*, *d*; and Parker, 6, Plate 128, figures 1 to 5, 10), and in Vermont (Perkins, 3, Plate XXXIV). They are more rarely found at non-Iroquoian sites (author, 2, Figure 33).

TRAPS AND SNARES

Cylindrical tubes made from wing bones of birds, like some of those described as probably being beads, were possibly parts of snares, through which the noose was passed to allow it to run freely and to keep it in position.

DOUBLE-POINTED STRAIGHT BAIT-HOLDERS

Double-pointed bone specimens like some of the shorter specimens described under bone awls may have been used for catching fish by fastening a line near the middle, which, if properly baited, could not be disgorged when swallowed by the fish. They differ from similar double-pointed objects, used by the Eskimo for the purpose, in not having a groove for the attachment of the line near the middle, although grooves, as Rau observes, "are not absolutely necessary features" (page 119).

BONE HOOKS OR BARBS FOR FISH-HOOKS

Thirty-nine of the pointed bone objects considered as awls may also have been hooks or barbs for compound fish-hooks. The specimens illustrated in Plate I, figures 9 and 19, elsewhere described as points for arrows, likewise were adapted for the purpose, and so also were sharpened splint bones of the deer. The shouldered specimen seen in Plate I, figure 13, seems especially adapted for such a use.

Eleven other bone specimens seem to have been specially made for the purpose. One of these, apparently made of the rib of a small mammal, illustrated in Plate I, figure 33, if the bevelled end were fastened to a straight shank, would allow the point to project about $\frac{7}{8}$ inch; it could have been made to project much more by cutting off the wooden shank at a slant too, and fastening to it the slanting end of the bone that is correspondingly flattened. Nine other specimens were made from pectoral spines, and one from a dorsal spine, of the common catfish, by removing the articular end, cutting or grinding this end on the side opposite the toothed edge down at a slant, and slightly accentuating the sharpness of the tip. The apices of the teeth being directed downward probably assisted in holding the fish. A few of the specimens show signs of longitudinal scraping or cutting. Similar specimens have been found at Neutral sites in southwestern Ontario (*See* author, 8, Plate I, figure 19).

Fish-hooks consisting of a sharp piece of bone secured to a wooden shank at an angle are in use among some modern Indians (*See* Smith, 3, Plate XXI, figure 2) and Eskimo (*See* Turner, figure 149). Sagard (2:588) described some fish-hooks "found in the bellies of several large fishes" which were "made of a piece of wood and bone, so placed as to form a hook, and very neatly bound together with hemp," but it is not clear from the context whether these hooks were used by the Huron or some other tribe. If the Huron did use this type of hook it is probable that it was used here also.

BARBED BONE FISH-HOOKS

Four bone fish-hooks, two of which are broken, and two broken barbs of other hooks were found. Two of these are illustrated in Plate I, figures 31, 32. They all retain part of the marrow cavity on one side, making the cross-section concavo-convex. None is smoothly finished. The shanks are slender; the upper end of the one on the hook in figure 31 and of one that is not illustrated (Cat. No. VIII-F-14010b) is cut off at a slant, and that of another is cut off squarely. One hook has both edges of the upper end of the shank grooved for the attachment of a line; there are two grooves on the inner edge of the shaft on the hook in Plate I, figure 31; and there is a single groove on the inner edge and two on the outer edge of the other complete specimen. The hook in Plate I, figure 32, differs from the others found here, and elsewhere at Iroquoian sites, in having a nearly oval, biconical line hole through the upper extremity of the shank,¹ and the end of the shank is indented in line with the hole; the edges of the hole and indentation, however, do not show any signs of wear from the chafing of the line. The length of the hook or barbed part of the two complete specimens (figure 31 and Cat. No. VIII-F-14010b) is about two-thirds of the length of the shank; the tips of both hooks are sharp, and the tip of the barb of one is blunt and that of the other is sharp. The base of two of the hooks is rounded (Plate I, figure 32) and that of the one seen in figure 31, in the same plate, is nearly straight.

These hooks might seem rather large for use in our inland waters, but they were certainly not too large when we consider the usual size of such fish as the garfish, pike, yellow pickerel, and common catfish, of which we found remains in the refuse heaps.

A similarly barbed fish-hook was found at an early Huron site near Lindsay (See Boyle, 3, Figure 20), and another comes from a site in Fenelon township, Victoria county (See Boyle, 11, Figure 29). Two others were found on another Huron site, on the Essons farm, a few miles east of Orillia.² They also occur at other Iroquoian sites in Jefferson, Madison, and Onondaga counties, New York (See Beauchamp, 4, Plate 22; Skinner, 4, Plate XXIV, figure *e*; and Parker, 6, Plate 33, figure 7).

In addition to the completed specimens, eighteen pieces of bone showing the method of manufacture of fish-hooks were found. All of them retain the marrow hollow on one side and two show the cancellated structure of the bone. Most of the blanks were separated from the stock bone by grooving and breaking; the rough broken ends were removed by a similar process. Some of them show evidences of most of the successive stages of manufacture. The blanks were separated from the bone either by breaking, or grooving and breaking; in some cases one edge shows breaking and the other cutting and breaking. One end of a few blanks is left in a rough, broken state; in others, both ends were severed by grooving and breaking. The end of one of the blanks is whittled and others have one or both ends smoothed. What seems to have been the next step, after the blank was separated from the bone, was to scrape the convex surface, this

¹The only other perforated bone fish-hook of which the writer has any record was found at the well-known Madisonville site, in Ohio (See Rau, fig. 192, and Willoughby, 2, Plate 11, fig. *a*).

²Cat. Nos. HD. 874 and HD. 1000, Roy. Ont. Mus. Archæology, Toronto.

process being continued until an oblong opening was worked through the bone, leaving the shank, point, and barb to be worked out by further cutting, scraping, and grinding. In the specimen illustrated (Plate I, figure 28), the workman set out to make a hook in a slightly different manner. First of all he seems to have laid out his work by making the faintly scribed longitudinal lines that are seen on either side of the prominent ridge; the next step appears to have been to remove the superfluous bone lying between these lines, as is evidenced by longitudinal marks of scraping near and parallel with the scribed line on the right. The making of the deep hollow in the front of the lower part may have been a secondary operation. The difficulty of removing so much of the bone probably discouraged the maker and he abandoned the task, to which circumstance we owe this instructive specimen. Another blank (Cat. No. VIII-F-11477) shows a further advance. A deep hollow in the lower part has been excavated half-way through the bone, but a break at the left edge rendered it too narrow for the production of the barbed portion and so it was rejected. The marks of the whittling or scraping can be plainly seen. One of the blanks (Cat. No. VIII-F-11813) differs from the others in having both sides excavated, but more so on the hollow than on the rounded side. Unless the maker intended to produce a barbless hook the work on this blank had proceeded far enough to show that the width was not sufficient to permit the forming of the barb, which perhaps led to its rejection. A fragmentary blank (Cat. No. VIII-F-13898b) is interesting as suggesting that in some cases the first undertaking in making a hook was to cut a hole through the lower part of the blank, then to remove the bone between what was to be the shank and the barbed part of the hook by cutting a longitudinal groove, or two more or less parallel grooves, and enlarging this opening by cutting or whittling. Another broken specimen (Cat. No. VIII-F-10066) shows evidence of three successive processes—the preliminary flattening by scraping, the cutting of a hole through the lower part, and the removal of the superfluous material by whittling. In the fragmentary specimen illustrated in Plate I, figure 29, only the small septum remained to be cut away, when what may have been intended to become the shank was broken. Another fragmentary specimen had the middle portion of the blank removed when it became broken. A hook from a broken, unfinished specimen (Cat. No. VIII-F-10362) resembles the hook portion of pre-historic European fish-hooks (*See* Rau, Figures 46 and 48) in having a slight, barb-like shoulder on the inside edge, which is due to the method of manufacture by first cutting a hole through the blank, as already described. A fish-hook found on Cunningham island, lake Erie, described and illustrated by Schoolcraft (page 87 and Plate 38, figure 4), has a similar barb-like projection. The fragment of a nearly completed hook in Plate I, figure 30, shows several stages of manufacture—the cutting of a hole through the lower part by patient whittling, the removal of superfluous material between the shank and the barbed portion by grooving with the plow grinder, and the rounding of the lower end by rubbing. The barbed edge shows grooving from both faces, the thin remaining septum being then broken.

That the manufacture of these hooks was difficult is shown by the number of broken, unfinished specimens as compared with those that are whole and completed.

Although the presence of barbs on these hooks seems to show European influence, none of the hooks appears to have been made other than with stone tools.

NETS

The Iroquois from Stadacona, met by Cartier on the Gaspé coast in 1534, used nets "made of hemp thread" (page 62), but no evidence of the use of nets and no net sinkers were found here.

HOES

Only a few artifacts, found here, could have been used as hoes. These are the heavy antler objects illustrated in Plate XVII, figures 22, 23, and more fully described under "Problematical and Miscellaneous Objects"; a few of them have one of the pointed ends distinctly polished as if from some such use. None of the large clam shells found here was adapted for the purpose and there is also no certain evidence that any of the stone adzes or celts were ever used for the purpose.

Probably wooden hoes were used, as among the Iroquois of the lower St. Lawrence.¹

PREPARATION OF FOOD

Specimens used in the preparation of food consist of knives, mortars, mullers, and pottery.

KNIVES

Some of the points chipped from stone (Plate I, figures 5 to 7), a long, narrow, leaf-shaped, knife-like blade in Mr. White's collection, and sharp-edged chert chips may have been mounted in handles for use as knives in cutting up meat. Some of the clam shells with sharp, ventral margins may also have been used for the purpose; at least they are as sharp as some of the points chipped from stone and would be quite as serviceable.

MORTARS

Fifty stone mortars were found on the surface and in the refuse heaps of the site, but only a few are whole. A few of them are hollowed on both sides and one is of the flattened metate type. They are mostly derived from flat slabs of granite, gneiss, granite-gneiss, limestone, sandstone, and quartzite, and are of various sizes, the smallest being 7 inches long, $4\frac{3}{4}$ inches wide, and $3\frac{3}{4}$ inches thick, and the largest, roughly square in outline, is 14 inches in diameter and 4 inches thick. One of the broken specimens had a basin-like hollow at least 2 inches deep. Guest describes a large specimen from the site, made of "hornblendic gneiss," which "was hollowed out into a cavity of sixteen inches in length, twelve in breadth,

¹Cartier (pp. 182-183) says: "They are by no means a laborious people and work the soil with short bits of wood about half a sword in length. With these they hoe their corn."

and four and a half inches in depth" (page 273. See his Figure 2). There was a large boulder of gneissoid rock, about 3 feet long and 2 wide, on the north side of the road, nearly opposite the Kelso-White line fence, with several shallow depressions on the upper surface, in which corn may have been ground.

Most of the mortars are small and could have been easily carried on hunting trips, which seems to have been the practice of the Mohawks, of whom De Vries wrote: "When they travel they take a flat stone and press it with another stone placed upon the first" (page 107). *Megalopensis* also speaks of this method of grinding corn. "Their bread," he says (page 156), "is Indian corn beaten to pieces between two stones."

It is probable that the people here also used wooden mortars as at Hochelaga¹ and among the Hurons (Champlain, Figure H), which were similar to those used by the modern Iroquois (Waugh, page 58 and Plate XVIII).

MULLERS

Forty mullers made of cobbles of granite and other rocks were found. More than half of them show very little artificial modification beyond the flattening of the sides and peripheral abrasions; in some cases only one side is flattened. Some of them appear to have been worn to their present shape by continual use. Nine specimens, in addition to the flattening, are pitted on one side and eleven are pitted on both sides. The one in Plate I, figure 35, with both of the longer edges battered until it is of an oblong shape, has the flat sides smoothed and polished from use. The flattened stone object in figure 34, in the same plate, may also have been used as a muller.

These mullers were probably used as the upper millstones to crush corn, seeds, and nuts in some of the shallow mortars. The pits in some of them may have been intended to afford a finger hold while in use, or may be the result of cracking the hard shells of nuts.

COOKING

One of the first requirements, before it was possible to cook, was fire, and several methods of producing it may have been used. Waugh (page 50) mentions the following methods in use among the modern Iroquois: with flint and pyrites; with either fire, pump, or bow drills; with a fire plow; and with a fire saw. He thinks, however, that "The fact of such a variety of methods being found in use contemporaneously evidently denotes accultural influences."

Some of the chert chips may have been used to strike fire from iron pyrites, of which several nodules were found. Van Curler says the Mohawk used flint in the fire-making (Wilson, page 96).

It is possible that such a simple device as a fire-drill was also used. The Huron Indians are known to have employed this method (See Jesuit Relations, VI, page 267, and XXX, page 279; and Sagard, 1:48-49, and 2:180-181). *Megalopensis* (page 154) says the Mohawk produced "fire by rubbing pieces of wood against one another, and that very quickly."

¹Cartier (p. 157) says: "They have wooden mortars, like those used in France for braying hemp, and in these with wooden pestles they pound the corn into flour."

It is possible, also, if the use of the pump drill for fire-making was not recently introduced among the Iroquois, that the wooden disk, seen in Plate XVII, figure 11, was the whorl of such an apparatus. Although it is much smaller and thinner than those of modern drills, it may have been sufficiently heavy to give momentum to a small spindle.

The methods of cooking used by the people of this site probably were the same or differed only slightly from those of the other Iroquois, which have been described by early travellers and missionaries. We have, of course, very little direct evidence of cooking, beyond the fact that the inside of some of the pots is incrustated with the carbonized remains of food cooked in them. Burnt stones, which were found almost everywhere at the site, were probably used as props to keep the cooking pots upright, and may perhaps have been heated and dropped into vessels containing the water in which food was boiled. Corn and other plant foods may have been roasted in the hot ashes and meat was probably roasted before open fires. Cartier, speaking of the corn meal made by the Indians of Hochelaga, says they knead it "into dough, of which they make small loaves, which they set on a broad hot stone and then cover them with hot pebbles. In this way they bake their bread for want of an oven" (page 157). If this method were followed here it might account for some of the many burnt stones. One method of baking corn is suggested by two whole lumps of burnt clay (Plate XVII, figures 15 and 16) and a fragment of another, which bear the imprint of corn leaves and look as if they had been wrapped in corn leaves and tied and then baked. They may have been made by children in imitation of their elders who, perhaps, like the Mohawk described by De Vries (page 107), made corn-meal cakes similar to the leaf-bread tamales or packages of the modern Iroquois, described by Parker (2:66) and Waugh (page 99), and baked them in the ashes. The cords that held the corn leaves in place, as on the leaf-bread packages illustrated by Waugh in his Plate XXXIII, figures b, c, probably caused the constrictions seen on the earthenware objects. The shape of these objects is also suggestive of Sagard's description of the Huron bread, which was "made like two balls joined together" (1:94).

POTTERY

The pottery recovered from this site was mostly in fragments, of which there are nearly eleven thousand. The only whole pots are small toy vessels. Five thousand nine hundred and thirty-eight of the fragments are pieces of rims, representing about four thousand eight hundred and eighty-eight pots.

The fragments were found in all of the refuse deposits. The larger pieces owe their size to the fact that they were buried beyond plough depth.

The pots varied in size from a little toy vessel, about $\frac{7}{8}$ inch wide and the same in height (Cat. No. VIII-F-11244), to some that were about 14 inches across the top and probably about 18 inches high, with a capacity of perhaps 3 or 4 gallons. Most of the pots seem to have been about 10 to 12 inches high with the body from 7 to 9 inches in diameter across the bilge. In general the larger pots seem to have been smaller than those from Neutral sites in southwestern Ontario.

Most of the pots seem to have been symmetrically and gracefully proportioned. The shapes varied and four different types can be recognized. They may be characterized as follows: the first, and what may be regarded as the primal type, of which four examples were found, is of the most elementary form, being cup-like, with rounded base and more or less straight, vertical sides (*See* in Plate XII, figures 2-4). The second type, represented by fragments of three vessels and a whole specimen, had a vertical rim, much smaller in circumference than the globular body (*See* Plate II, figure 4, and cross-section of another fragment in Plate XII, figure 1). The third type had a globular body, constricted neck, and flaring or everted rim (*See* Plate II, figures 15, 23, 25, also cross-sections in Plate XII, figures 5-18, 23, and 27). There are fragments of ninety-nine pots of this type. The fourth type, of which there are fragments of four thousand seven hundred and eighty-one pots, had the globular body and constricted neck of the third type, but differed from it in having an overhanging, cornice-like collar, showing varying degrees of development, from low to high, from simple to elaborate, and finally to those with handles. A few pots of this type had an oblong body.

No evidence of a chronological sequence of types was discovered; those from lower levels being of the same types as those occurring in the higher or upper parts of the refuse deposits. It is possible, however, that the third type is a survival of an earlier stage in Iroquois pottery development.

The simple pots of the first two types are usually small and crude, and were probably toys made for, or by, children. Two of these pots had an encircling shallow groove corresponding to the constricted neck of other pots of the third and fourth types (*See* cross-sections in Plate XII, figures 3, 4).

The rims of the third type of pot show differences in shape, as can be seen in the cross-sections in Plate XII, figures 5-18; a few even have a suggestion of the overhanging collar of the fourth type (*See* cross-sections in Plate XII, figures 18, 23). The rims of more than half of the pots of this type have a cross-section like that in Plate XII, figure 18.

Many of the rims of the fourth type of pot show a considerable degree of specialization. The shapes of the collars on this type of pot can be seen in the cross-sections, from the simplest in Plate XII, figures 19, 21, 24, 26, 28, 30, with a mere suggestion of an overhanging rim, to the highly elaborated collars seen in figures 33 to 92. The collars are mostly vertical and smaller in circumference than the body. A few slant inward (Plate VII, figure 2); others outward, as in the one shown in cross-section in Plate XII, figure 63; and another has part of the upper portion of the rim inverted at a sharp angle (*See* Plate VII, figure 3, and the cross-section in Plate XII, figure 80). The outside of the collar is either more or less straight vertically (Plate XII, figures 59, 61, 66, 67, 69, 70, 76, 91); convex, as on three hundred and fifteen pots, twenty-two of them being concavo-convex in cross-section (Plate XII, figure 60); or concave, as on one thousand two hundred and ninety-one pots (*See* cross-sections in Plate XII, figures 37, 41, 43, 45, 53, 57, 87, 89). Some of the collars have the lip slightly everted as shown in the cross-sections in Plate XII, figures 54, 55, and 84.

Two hundred and ninety pots have projecting, spout-like lips, the largest proportion of them being parts of pots having oval or ovate mouths and narrow collars (*See* cross-sections in Plate XII, figures 86, 87, 89-92). Forty of the lips have the top obtusely pointed (*See* Plate IX, figures 14, 16, 17, and Plate X, figures 8-10, 15); others have the top squared, giving a battlemented effect in some cases (*See* Plate X, figures 12 and 17). There are from one to three vertical grooves on the front angle of a few lips, some of the grooves being extremely wide (*See* Plate X, figures 13, 17, and 19). Six of the lips have the inner angle notched; three are similarly notched on the outer angle (Plate II, figure 6); and two others have a deep notch on the lower angle. Six lips have a transverse groove across the peak (*See* Plate IX, figure 15, and Plate X, figure 17); and there is a groove in the opposite direction on four others (*See* Plate II, figure 13 (top), and Plate IX, figure 23).

The shape of the mouth of the pot depended on the shape of the rims. It is round (Plate VII, figure 11); ovate, with an angular lip at one end only; oval, with angular lips at opposite ends (*See* Plate VII, figure 10, and Plate XI); and polygonal, with from six to ten sides (*See* Plate II, figure 39, Plate VII, figure 2, and Plate X, figure 11). Only one of the pots had a collar with four sides,¹ but they are all convex. The mouth aperture of another pot was probably rectangular (*See* Plate VII, figure 3). Two of the pots had an undulating rim (*See* Plate III, figure 28).

About sixteen hundred and forty pots had peak-like elevations on the rim. On some of them, especially those with angular lips, there were only two peaks (*See* Plate XI). One of the round-mouthed pots had a peak on three sides, and a few others had one on four sides of the rim. There are from six to ten peaks on other rims, especially those with polygonal collars (*See* Plate VII, figure 2, and others illustrated). Thirty pots had groups of two (*See* Plate IV, figures 23, 24, and Plate VII, figure 11), and fifty-six others had groups of three peaks on two opposite sides of the rim (*See* Plate IV, figure 21, and Plate V, figure 5). In some cases, as in the partly restored rim in Plate VII, figure 9, there are groups of three peaks on three sides of the rim, giving the mouth a curvilinear-triangular outline. Other pots seem to have had groups of three peaks on four sides of the rim. On a few rims the peaks were so close together as to give the edge a scalloped appearance (*See* Plate III, figure 12). The rim margin of a few other pots is deeply notched (*See* Plate II, figure 26).

The edge of the rims was finished in various ways. It was more or less rounded on one hundred and seventy-six pots (*See* cross-sections in Plate XII, figures 2, 3, 4, 6, 22, 45, 79, 85, 87, 89). It was bevelled to the outside and inside on one hundred and thirty-eight pots (*See* cross-sections in Plate XII, figures 9, 56), the bevels being much sharper on ninety-nine others (*See* cross-section in Plate XII, figure 70). Part of the edge of thirty-six pots sloped to the outside, and it sloped to the inside on seventy-one others (*See* cross-section in Plate XII, figure 91). The edge of twenty-one pots was finished off like the one seen in the cross-section in Plate XII, figure 71. The edge sloped to the outside on eight hundred and fifty pots (*See* cross-sections in Plate XII, figures 5, 12, 14, 23, 49, 53, 54, 60), and

¹Pottery vessels with square mouths are rare at Iroquois sites; Perkins illustrates one from Vermont (3, Plate XXXVI, fig. d).

to the inside on one hundred and seventy others (*See* Plate XII, figures 39, 67). It was squared off on two thousand and seven pots (*See* Plate XII, figures 29, 47, 57, 59, 61, 64, 65, 76, 92), and it was concaved longitudinally on thirty-seven other pots (*See* Plate XII, figure 42). The edge of eleven pots was shaped somewhat like that in the cross-section in Plate XII, figure 36, except that the projecting flange was squared off. The outer angle of fifty-three pots (*See* Plate XII, figures 14, 17, 49, 50, 64, 72, 77, 83, 84) and the inner angle of one hundred and nineteen others (*See* Plate XII, figures 20, 66-68, 91) were dilated. The dilation of the inner angle of some of the rims was shaped like those in the cross-section in Plate XII, figures 52 and 68. Both outer and inner angles of the rim were dilated on fifty-two pots (*See* Plate XII, figure 82). The dilated inner angle of the rim of ten pots and of the outer angle of one hundred and forty-two other pots are flange-like (*See* cross-sections in Plate XII, figures 73-78, 88). The dilation was often due to the pressure exerted when notching the inner angle of the rims and in forming the scallops on rims of the corn-ear pattern.

The collars varied in height from $\frac{1}{4}$ inch to $3\frac{1}{4}$ inches, the majority being about $1\frac{1}{2}$ inches; but very few are very low or extremely high.

The overhanging collar is not an exclusively Iroquoian feature, although it does not seem to be common anywhere outside of the Iroquoian area.

Cushing's suggestion that the shapes of the more highly elaborated Iroquoian pots, like some of those found at Roebuck, were influenced by birch-bark prototypes,¹ and that the decorative designs were suggested by the stitching on the birch-bark vessels or porcupine quillwork, is extremely doubtful. Beauchamp (7:58) and, more recently, Speck (2:7) also regard it as improbable; as Speck says, "Certainly no actual specimens corresponding to such prototypic reconstructions are in existence to support such an idea."

The necks of the third and fourth types of pots varied from shallow to deeply constricted and from low to high, but they were deeply constricted on only about one hundred pots. The high neck on one pot, of which the cross-section is seen in Plate XII, figure 69, gave it a bottle-like appearance.

The shoulder was in most cases plain. It was distinctly ridged on two hundred and eighty pots (*See* cross-section in text Figure 2, *a*); a few have a cross-section like the one in *b*; three are like the one in *d*; four have a raised encircling band as seen in cross-section in *c*; and six others have a broad, flattened, encircling zone as in the cross-section in *e*.

Although the rim had reached a high degree of development, the body of the pots retained the globular form of the primal type, only some of those with oval mouths having an oblong body (*See* Plate XI). The sides of the body of five small pots seem to have been straight instead of bulging, and the vessels were probably shaped like one from York county, in the Museum (*See* Smith, 2, Plate XLVII, figure 2). One of the pots seems to have had a nearly flat bottom. None of them had feet or a pedestal base as on pots from Neutral sites in southwestern Ontario, one of which, from St. Davids, Lincoln county, is illustrated by Orr (3:92), and from sites

¹Page 520. *See also*, Holmes, 2: 161, and Parker 3: 499.

of other cultures in Arkansas (See Harrington, 2, Plate XLVI, figure *b*) and Ohio (See Holmes, 2, Plate CLXIII, figure *d*, and Willoughby, 2, Plate 24, figures *k* and *l*).

Twenty-nine pots had handles. Five fragments are parts of rims retaining parts of handles, four are shoulder fragments with the handles either partly or wholly missing, nine others are handles broken from rims, and the rest are rim fragments with the handles more or less complete. The larger fragments bearing handles are of small and medium-sized pots, with overhanging collars, all but one (which is that of a round-mouthed pot) having an oval mouth and an angular lip at each end (See Plate VII, figure 10). None of the polygonal rims had handles. In most cases there were probably two handles, although a few may have had only

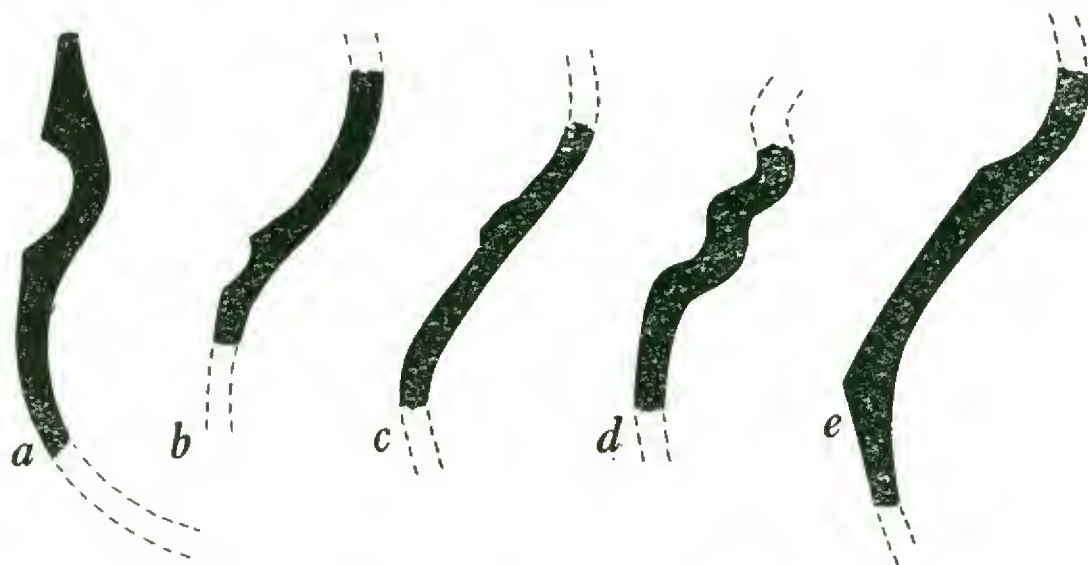


Figure 2. Cross-sections of shoulders of pots ($\frac{1}{2}$ natural size).

one, as on a pot from Baptiste lake, Hastings county (See Boyle, 5, Figure 4). The handles are of three different kinds: one is straight (Cat. No. VIII-F-10623), fifteen are curved (See Plate VII, figure 10, and Plate X, figures 16 and 21), and three are angular (Cat. Nos. VIII-F-9315, VIII-F-10625, and VIII-F-12606). The handle is merely a prolongation of the projecting lower angle of the angular lip on most of the fragments, the lower end merging with the shoulder. The upper end of the handle on others was attached to the underside of the lip (See Plate VII, figure 10). None of the handles is broad and flattened like some from post-European Iroquoian sites in Ontario and from sites of other cultures in the United States (See author, 6:41-42). They have either a more or less round, oval, ovoid, or mixtilinear-triangular cross-section, and are from $\frac{1}{4}$ to $\frac{5}{16}$ inch in diameter.

The handles do not seem to have been merely ornamental features but probably served for lifting and carrying the pots, although in only a few was the opening large enough to admit the fingers. Possibly the pots were carried by a cord secured to the handles.

Pottery with handles, which seems a very late development, has a limited distribution in eastern Canada, and occurs exclusively at Iroquoian sites. It is found at sites of the same culture as Roebuck in the St. Lawrence valley in Glengarry county, Ontario, and also occurs at other Iroquoian sites elsewhere in the province, one as far west as Middlesex

county—in some cases at pre-European sites (Orr, 2:27), in others at post-European (See author, 6, Figure 4). Handles are seldom seen on pottery from Iroquoian sites in New York (Beauchamp, 2: 142, and Parker, 3:487).

One of the shoulder fragments (Plate II, figure 12), bears a long projection, smoothed on the end, which may be the remains of a handle that was broken before the pot was fired.

What may be the remains of a lug can be seen on the inside of the pot fragment in Plate II, figure 14. Perhaps there was a human head on this projection as on the inner part of two angular lips (probably parts of the same pot), found at the site of Hochelaga (See Dawson, 3, Figures 15, 19).¹

A small toy pot has a modelled perforation through the rim, probably for suspension.

The thickness of the walls varied in different parts of the same pot. The rim of most of the pots was thicker than the neck, which also was mostly thinner than the shoulder, the increase in thickness of the latter in many cases being due to the presence of a distinct ridge on the outside, or on both outside and inside surfaces. The thinnest part of the pots seems to have been the bilge, one of the fragments being only $\frac{3}{32}$ inch thick, whereas the thickest part of the body of most pots was the base; some of the small, crude vessels have unusually thick bases. The rims are from $\frac{3}{16}$ inch to $1\frac{1}{4}$ inches thick, the majority being $\frac{3}{8}$ inch; the extremely thick pieces are chiefly angular lips. As a rule the thickest part of the rim is at the lower angle of the collar; the very convex rims are thickest at the middle. Fragments of the body are from $\frac{1}{8}$ inch to $\frac{3}{4}$ inch thick, most of them being $\frac{5}{16}$ inch; but only three fragments are more than $\frac{5}{8}$ inch.

The colour of the outer and inner surfaces of the pots is either buff, pinkish, various shades of red (very seldom terra-cotta), reddish brown, light brown, light grey, dark grey, or black. The majority of fragments are buff, red, and brown; the next largest number is black; and a very small number is grey. The largest number of fragments is black on the inside, and those with grey interiors are a little more numerous than those with red; one of the fragments has a bright red inside surface. There are about three times as many fragments with red outer and inner surfaces as there are of black or grey, and nearly three times as many with black on the outside and inside as with both surfaces grey. Many other fragments are of one colour on the outside and of another colour on the inside. In some cases fragments of the same vessel are of different colours; this being due to longer burial under different conditions; for instance, one part of the pot was buried in black refuse while another lay in a bed of ashes, and a change in colour was inevitable. Other fragments have been changed to a bright red by burning since the pot became broken, the fractured edges being of the same colour as the surfaces.

The blackened inside surface of the pots is due either to long usage or to a process designed to make the vessel more impervious.²

None of the pottery shows any evidence of painting.

¹One is Cat. No. 47 in the Gravel collection and the other is in the Murphy collection, museum of the Canadian Antiquarian and Numismatic Society, Montreal.

²The Pawnee Indians, according to Grinnell (p. 256), while the pot "was baking 'put corn in the pot and stirred it about, and this made it as hard as iron.' This," as Grinnell says, "may mean that it gave the pot a glaze on the inside." The Cherokee used corn-cobs for the purpose (Harrington, 1: 222-227).

Both outside and inside surfaces of the body of most of the pots were smooth; and some of the ware is glossy. Crazing can be seen on a few pieces, especially those containing coarse tempering.

All but twenty-six pots were decorated; the decoration occurring on the flattened edges only of rims of forty-three pots, mostly those of the third type; on the outside of the rims of two thousand one hundred and ninety-nine pots; on both outside and inside of rims of two thousand two hundred and twenty-six pots; on the edge and the outside of rims on one hundred and four pots; on the inside and edge of rims of eighteen pots; and on the outside, inside, and edge of rims of two hundred and seventy-two other pots. The decoration on the inside was not extensive, being confined to a narrow space immediately below the margin (*See* Plate III, figure 5), in some cases being on the inner angle, or on the dilated, flange-like projection occurring on some of the rims. The handles (*See* Plate VII, figure 10, and Plate X, figures 16 and 21) and even the underside of a few angular lips were decorated; one lip shows decoration on the inside (*See* Plate III, figure 1). The necks of two hundred and sixty-seven pots were ornamented, but it was extensive or elaborate only on the smaller pots. Fragments with decoration on the neck and rim only are seen in Plate VI, figures 7 and 11. Shoulders of one thousand and fifteen pots bore decoration, which was of the simplest character on most of the larger pots and extensive, in some cases elaborate, on the smaller vessels. Fragments with both shoulder and rim decorated are shown in Plate III, figure 20, Plate VII, figures 3 and 11, and Plate X, figure 19. A few pots, in addition to the ornamentation on the shoulder, were decorated on the rim and neck; that on the rim being mostly simple, whereas that on the neck and shoulder was extensive and elaborate (*See* Plate IV, figure 5, Plate VII, figure 8, Plate X, figures 16 and 21, and Plate XI). A small pot, of which a fragment is seen in Plate II, figure 22, is almost covered with decoration; but none of the pots seems to have had all-over decoration.

One of the rims bears a modelled representation of a human face in relief (Plate IX, figure 26). Pot rims bearing similar faces have been found in other Iroquoian sites in Ontario.

The abundance of pottery fragments suggests that a large number of pots were in constant use and that they were often broken.¹ The pots were probably put to various uses—the extremely small specimens may have been toys or held face paint; the more ornate, highly decorated, small or medium-sized vessels were possibly used in religious ceremonies; and the larger pots probably served as containers for food and as cooking vessels, the carbonized incrustation on the inside of many rims being the remains of the food cooked in them.

The overhanging collars on the pots were ornamental rather than useful, but there is no doubt that the projecting lips on some of the collars were more functional than ornamental, having probably been added to facilitate the pouring of liquids from the pots without spilling; one of them even has the inner angle of the lip grooved.

¹Sagard (2: 260), describing the earthenware pots, probably of the Hurons, says they "are so strong that they do not, like our own, break over the fire when having no water in them. But they cannot sustain dampness nor cold water so long as our own, since they become brittle and break at the least shock given them; otherwise they last very well."

Some of the methods employed in the manufacture of pottery are suggested by the appearance and structure of some of the specimens, including a few, irregular, baked nodules of clay, either accidentally or purposely baked, but of which only one shows tempering.

The material used in making all but a very few of the pots was clay tempered with crushed gneiss; the broken edge of one of the fragments shows what seem to be particles of limestone. The tempering material is of several grades, from fine to very coarse, being medium coarse in the largest number of pots and very coarse in only a few of the larger vessels.

The pottery was not made by the coiling process, at least none of it is broken into long, narrow pieces, with two long edges parallel, as in coiled Algonkian ware from the Atlantic coast (*See Smith, 3, Plate VIII, figure 11 a*). If this were the method followed in making the pottery from this site, the potters must have been unusually adept in blending and obscuring the junctions of the coils. It is more likely that the pots were formed directly from a mass of clay in the manner described by Sagard, who, speaking of what seems to have been the Huron method, says: "The savages make them by taking some earth of the right kind, which they clean and knead well in their hands, mixing with it, on what principle I know not, a small quantity of grease. Then making the mass the shape of a ball, they make an indentation in the middle of it with the fist, which they make continually larger by striking repeatedly on the outside with a little wooden paddle as much as is necessary to complete it. These vessels are of different sizes, without feet or handles, completely round like a ball, excepting the mouth, which projects a little" (2:260). Experiments made by the writer showed that it was possible to make most of the smaller pots found here by this method. The small toy pot mentioned on page 35 was modelled over the end of a finger.

There is no evidence that a thin slip of clay was applied to the surface of the pots before firing.

The appearance of the overhanging rim suggests that it is simply a cylindrical collar superimposed upon a flaring rim of the third type of pot form; only one of the fragmentary pots found here, however, appears to show evidence of this having been done. In this case the collar was added to the thinned, upper edge of the neck of the unfinished pot with a lap weld; it is possible that many collars were similarly added.

The margin was probably modelled into shape after the collar had been added. One fragment (Cat. No. VIII-F-10662b) shows how an irregular, unfinished top was given a squared margin, by folding a thin slab of clay over the unfinished edge and welding its thinned-out edges to the rough outside and inside surfaces of the pot. Another method of finishing off the top of the rim was to lute a thin strip of clay to the margin. Although all of the rims were perhaps not so treated it is certain that twenty-two pots had the lower angle of the more or less pointed, projecting lips added by luting. This is suggested by the presence of a small crack in the thickest part of the lip; the junction having been insufficiently welded it was cracked in the firing.

The outside surface of the pots was malleated either by scarifying or by beating with a paddle.

Scarifying can be seen on forty-five fragments, but only the lower part of the pot was so treated. It has been partly effaced by subsequent smoothing on most of the pots. The grooves on a few pieces form a sort of herring-bone pattern as on the shoulder fragment in Plate II, figure 2. In a few instances the grooves are in every direction. A few pots are scarified on the inside.

Some of the grooves that appear to have been the result of scarifying may also have been produced with a ribbed paddle.

The lower part of twelve pots is covered with what seems to be textile texturing, one of them having apparently been textured with a paddle wound with poorly made cords or with grass leaves. Other pieces show texturing in patches. Pottery with this kind of surface finish is rare at most Iroquoian sites.

Body fragments of about one thousand one hundred pots bear chequer marks produced with a malleating paddle having a griddle-like surface. Even one of the very small pots bears these markings and they occur on the collar of another vessel. In most instances the marks are square (Plate II, figure 1), but, more rarely, they are rectangular. In a few cases there are two sizes of markings on the same pot. One fragment shows both scarifying and chequering.

Pottery with chequered paddle marking has been found at other sites of the same culture as this site in Dundas and Glengarry counties, Ontario; at a site in Hull county (*See* Smith, 2, Plate LXXXII), at the site of Hochelaga (Dawson, 1, Figure 4, and 3, Figure 22e), and at another site near Lanoraie, Berthier county, Quebec. It also occurs at Neutral sites in Ontario (author, 8:17), Iroquoian sites in New York (Skinner, 4, Plate XXVI, and Parker, 6, Plate 27), and in graves (probably Andaste) in northern Pennsylvania (Holmes, 2, Plate CXLVI, figure c). But chequering on pottery is not an exclusively northern Iroquoian feature, as it occurs on pottery from Cherokee graves in Tennessee (Harrington, 3, Plate LI, figure c) and from sites of other cultures from Ohio south to Florida (*See* Nelson, pages 97-99).

The handles seem to have been attached to the pots in three different ways. The simplest method was to make a short cylinder or curved piece of clay and weld one end either to the lower angle or to the underside of the angular lip and the other end to the shoulder, as seems to have been done with the handle on the fragments seen in Plate X, figures 16 and 21. Another method seems to have been to have enough material at the ends of the handle to allow it to be spread and welded to the rim and wall at either end, and even to form the lower angle of the lip, as seems to have been done on the rim fragment seen in Plate VII, figure 10. Several other handles were attached in the way suggested by Holmes (2:54); i.e., the ends of the handles were set in holes pierced through the wall and then secured on the inside by spreading and smoothing the clay. As is suggested by the appearance of the hole left by the breaking of the handle on one of the fragments (Cat. No. VIII-F-9157), the hole in this instance went only half-way through the wall. In two other examples one end of the handle seems to have been brought to a cone shape before it was inserted in the hole (*See* Plate II, figure 17). The handle of another pot apparently had the upper end luted to the projecting lower angle of

the lip and the other end inserted in a small hole in the shoulder (Cat. No. VIII-F-10194). A slightly curved, cylindrical piece of baked clay, with the ends scarfed, and two fragments of baked clay cylinders had probably been prepared for handles.

The decorative processes employed at this site were modelling, luting, punching, impressing, stamping, trailing, incising, and pinching.

Modelling to produce æsthetic effects can be seen on the rims of pots, especially those with angular lips, and on the shoulders (*See* cross-sections in Plate XII and text Figure 2). Some of the ornamentation in relief seems to have been modelled; the face on the side of the rim fragment in Plate IX, figure 26, may also have been modelled and not luted to the rim.

Most of the raised ornamentation on the pottery was applied to the surface by luting (*See* Plate V, figures 28 and 29, and Plate X, figures 2, 4-6).

Punching can be seen on only a few of the pots, most of the holes having been made with finely pointed tools, probably some of the bone awls (*See* Plate II, figure 33). Large, deep, conical depressions on two shoulder fragments, one of which is seen in Plate II, figure 20, were probably made with the rounded end of an antler tine.

Impressing was done with the fingers and finger-nails, cords, and special tools. The fingers and nails were used to produce various æsthetic effects, some of which may be described under this head. The large hollows in the centre of some of the circles (*See* Plate VIII, figure 13) and along the lower angle of some of the rims seem to have been made with the ball of the little finger; those on the fragment in Plate IV, figure 7, were produced with the tip of the thumb. Impressions like those on the fragments seen in Plate II, figure 22, and Plate III, figure 30, were made with the nails.

The vertical impressions on one of the rim fragments (Cat. No. VIII-F-9734a) look as if they had been made with a twisted, cord-like bundle of fibres; and twisted cords were probably used to produce the lines and other impressions on another fragment (Cat. No. VIII-F-9584).

The oval depressions between the lines of some of the chevron designs (*See* Plate IV, figures 14 and 16) and elsewhere on the rims (*See* Plate VI, figure 4); and the round, oval, and oblong depressions within the stamped circles (*See* Plate VI, figure 25, Plate VIII, figures 14, 26, and Plate IX, figures 16, 18-21, 24) could have been made by pressing the end of an antler tine into the clay; one of the tines, as is suggested by the appearance of the depression in the centre of the circles on the fragment in Plate VIII, figure 17, having a groove across the rounded end. Tools with round ends were also used to produce some of the depressions on top of the rim margins. The shape of the oblong and oviform depressions depended on the angle at which the tool was held; thus, if the tool were held at a right angle to the surface there would be a round depression, and if it were held at a slant the resulting depression would be either oval or oviform. The tip of the paddle-shaped bone object seen in Plate XVII, figure 1, if pressed into the clay at an angle, would produce oval depressions; similar tools may have been used to produce lenticular depressions. The double row of rounded depressions on the lower part of the rim seen in Plate IX, figure 11, seems to have been made with a tool that had two, small, rounded

eminences on the marking end; and a similar tool seems to have been used to produce the depressions on the edge of the rim fragment seen in Plate II, figure 23.

The reniform depressions seen on some of the rim margins (*See* Plate II, figures 7, 8) seem to have been made with the end of a tool that was either half-round or semi-circular in cross-section.

Pressing the corner of a squared stick, held at an angle, into the clay resulted in triangular depressions like those seen on the shoulder fragments in Plate VI, figures 15, 16. The double row of crudely made depressions on the fragments seen in Plate II, figure 32, and Plate IV, figure 15 (on lower angle), seem to have been made with a tool that was square or triangular in cross-section, the length of the depression depending on the angle at which the tool was held. The diamond-shaped depressions seen on a few rim fragments were probably made with similar tools.

The notches on the outer and inner angles of the rim were probably made by pressing a stick, triangular or square in cross-section, cornerwise across the angle (*See* Plate II, figure 18). The round, oval, oviform, and oblong notches along the lower angle of many of the rims seem to have been produced with the rounded edge of an awl, antler tine, or other tool, the size of the notches depending on the thickness of the tool and the amount of pressure exerted (*See* Plate V, figure 16). Other kinds of notches were produced with a square-ended stick, and crude ones were made with rough-ended sticks.

The elliptical depressions forming what were probably intended to represent the eyes and mouth of a face, seen in Plate IX, figure 2, were probably made with the tip of a paddle-shaped bone object like the one in Plate XVII, figure 1.

The decoration on rims of a small number of pots was made with a roulette, which may either have been a notched wheel like the one reconstructed by Holmes (2, Figure 43) or a thin, wide, spatulate rocking stamp with the rounded end notched. The lines filling the triangular plats of the chevrons, on account of their unequal lengths, could only have been made with the rocking stamp, as it was possible to make both long and short lines with the one tool, by simply regulating the rocking. The lines on the fragment in Plate II, figure 40, are slightly curved, and were probably so made by giving the stamp a slight turn while rocking it. The separate impressions composing the lines made with rocking stamps are of different kinds, most of them being rectangular; some are somewhat square and crude; others rhomboid-ovate. The stamp that was used to make the lines on one rim fragment (Cat. No. VIII-F-10614) must have had a very thin edge, with the notches close together, and the one used to make the row of oblique lines on another fragment (Plate II, figure 41) also appears to have been finely notched. Some of the impressions show that the notches on the edges of certain stamps were at unequal distances apart; one stamp seems to have borne but three notches. Other rim fragments with markings made with rocking stamps are seen in Plate II, figures 37 and 39; the finer decoration on the shoulder fragment in Plate II, figure 38, may also have been produced with this kind of stamp.

Decoration produced with rocking stamps is not confined to Iroquoian pottery, as it occurs on Algonkian pots from Ontario, the Maritime

Provinces (Smith, 3, Plate X, figure 14), and in New Jersey (Abbott, Figure 169), and on Holmes' "Northwestern Group" of pottery from Wisconsin (Abbott, Figure 170), Iowa, Illinois, Michigan, Indiana, and Ohio (See pieces so marked in Holmes, 2, Plates CLXVI to CLXIX and CLXXI, and Figure 74). It occurs on pottery from sites of the same culture as Roebuck in the St. Lawrence valley, in Grenville and Glengarry counties, Ontario; at the site of Hochelaga (Dawson, 3, Figure 16), and at another site near Lanoraie, Quebec; in Jefferson county, New York (Skinner, 4, Plates XXVIII, XXIX, XXXIII, XXXIV, XXXV, and XXXVI); and in Vermont (Perkins, 3, Plate XXXV). Others have been found at other Iroquoian sites in Ontario and New York (Beauchamp, 2, Figures 16, 20, and 100).

The circles seen on many of the pots were probably made by stamping with the ends of some of the small, cylindrical bone tubes, described elsewhere in this report as beads (See the fragments with this kind of decoration illustrated in Plates II, III, V, and VI to IX). Tubes of two different sizes were used to make the concentric circles seen on the rim fragment in Plate VIII, figure 15; the mouthpiece of a pipe stem seems to have been used to make other circles, and it is probable that a few others were made by stamping with some of the flattened, discoidal stone beads. A few were made with a broken tube, the resulting impressions being horseshoe like; others, as on the rim fragment in Plate VIII, figure 6, were made in halves with a semicircular stamp. In some cases the circles were crowded so closely that they merged with one another. They are from $\frac{1}{8}$ to $\frac{1}{2}$ inch in diameter. In most instances they are shallow; in one case $\frac{1}{4}$ inch deep. In a few cases the circles were stamped after the general design had been made, as on the fragments in Plate VII, figure 2, Plate VIII, figures 11, 19, and Plate IX, figure 7, where the raised part enclosed by circles is crossed by lines.

Other circular impressions were produced by stamping with the end of a solid, cylindrical tool (See Plate VIII, figure 2).

Lines were made by drawing, or by trailing and incising. Trailing the blunt point of a wooden, bone, or antler tool across the plastic surface of the pots produced grooves more or less regular in width. Some of the lines may have been produced with the tool made from the lower jaw of the bear, seen in Plate XVII, figure 18; actual experiment shows that it is adapted for the purpose. Lines may also have been made with the bone objects in Plate XVII, figures 1-3, 5, and probably also some of the pointed bone objects described as awls, especially those with flattened points like the one in Plate XIV, figure 31. Few of the lines are as fine and close together as those on the small pot seen in Plate XI. Some are poorly made, or else have been obscured by subsequent smoothing; others are broken; and a few, as is suggested by the ragged edges, were made after the surface of the pot had become partly dry. Other lines were unevenly drawn, in some cases being wider and deeper at one end than at the other, or wider in the middle than at the ends; and they were so deeply impressed on certain pots as to leave a wide groove (See cross-section in Plate XII, figure 46). The people here, in common with the other Iroquois tribes, seem to have lacked the ability to draw a curved line freehand; Parker (4:499-500) thinks they deliberately avoided making curved lines. The

nearest approach to curved lines on pottery from this site can be seen on the fragments in Plate V, figures 1 and 4; *See also* Plate IX, figure 27 (around the top of the peaked elevation). Crude circles on one of the fragments, instead of being stamped, seem to have been drawn into the clay with a finely pointed tool.

Incised lines, which differ from the trailed lines in having been made with a knife-like tool and in being mostly narrower and deeper, occur on a few pots.

A few pots had lines made by drawing the point of a tool with a jerky motion across the surface, producing a row of impressions, which in some cases look like cord impressions.

The fingers and thumb were used to pinch the clay to produce indentations along the lower angle of the rim of a large number of pots (*See* Plate III, figures 22, 31, 32; Plate IV, figures 8, 18; Plate V, figures 6, 8; Plate VI, figures 17, 22, 27; Plate VII, figure 2; Plate VIII, figures 8, 18; Plate IX, figures 2, 5-7; and Plate X, figure 11). Some of the indentations are deep (*See* Plate IV, figure 12); others are shallow (*See* Plate III, figure 35); and in some cases they show the impression of the nail in the hollow. Those on the fragment in Plate II, figure 29, were produced with the thumb-nail, and they seem to have been similarly made on a few other pots. The pinching on another rim resulted in oblong, vertical elevations (*See* Plate III, figure 26).

It is uncertain how the decoration along the lower angle of the rim and on the shoulders of other pots was made (*See* Plate II, figure 21, and Cat. Nos. VIII-F-9929, VIII-F-10383, and VIII-F-12583c).

No evidence of the method of firing was discovered. Its effects, however, can be seen on the inside and outside surfaces and the fractured edges of some of the pieces. The colour of the surfaces, which was in part due to firing, has been discussed on page 40. The fractured edges are either of a uniform colour; of two colours, that is, the inner part of the edge was darker than the outside; or of three colours, the outside part being either red or grey, the inner core, black, and that next to the inside surface, either red or grey. The fractured edges of most of the thin pieces were of a uniform colour which would seem to indicate that the thin ware was more thoroughly baked than the thick ware. In some cases one of the broken edges is of a uniform colour, whereas another edge may present two colours, which may be due to uneven firing, as is also, probably, the mottled appearance of the outer surface of some of the pieces.

The firing in many cases revealed defects in manufacture, such as welding and luting, pieces of both rim and body being cracked parallel with the surface, so that the fractured edge in some cases presents a laminated appearance. More body pieces than rims show splitting.

Many pots, especially those with light red or buff interiors, were probably broken in the course of the firing.

Most of the ware, except that with very coarse tempering, was thoroughly burnt, and is hard and firm.

A few pottery fragments, comprising both rim and body pieces, have holes drilled near the broken edges, which were made in order to bind the broken edges together.

One of the rims was cracked and had the outer and inner surfaces covered with a fine layer of clay in order to hold it together.

SPOONS

No spoons of bone or antler, such as have been found at post-European Iroquoian sites in southwestern Ontario (*See Skinner, 3*) were discovered. It is possible that spoons were made of wood as among the modern Iroquois, but none of these survived owing to the perishable material. Clam shells may have been used for the purpose, especially those with the edges worn, apparently from scraping against the insides of rough pottery vessels. A crude earthenware object shaped like the bowl of a spoon was found (Plate II, figure 3,¹ but it is not likely to have been used for the purpose.

FORKS

Wooden forks or eating sticks are used by the modern Iroquois, but any that may have been made of this material and used here have decayed or at least were not found. Some of the pointed bone objects considered as awls, however, may have been used for the purpose.

CORN SCRAPERS

Four lower jaws of the deer, with the condyle and the coronoid process broken off, may have been used as scrapers for removing corn from the cob as among modern Iroquois.²

CORN-HUSKING PINS

It is possible that some of the pointed antler objects, found here, were used as corn-husking pins. The perforated antler object seen in Plate XVII, figure 25, may have been used for the purpose, the loop which is slipped over the middle finger being fastened through the hole (*See Waugh, Plate VI, figures a and b, showing pins used by modern Iroquois*).

IMPLEMENTS USED BY MEN

Artifacts, which were probably used by men, consist of antler wedges or chisels, stone adzes, stone hammers, chisels and knives made of beaver teeth, knives made of bear teeth, handles for knives, and whetstones. Some of the objects considered under "Problematical and Miscellaneous Objects," may also have been used by men. No cylindrical antler tools used in flaking or chipping stone arrow-points or scrapers were found, although they are common in Iroquoian sites elsewhere in Ontario and in New York. If such tools were used as chipping tools, as is generally believed, their absence here would correspond with the scarcity of chipped objects. The scars on the sides near the tip of a polished antler tine found here, however, may have been caused by use as a tool in flaking by pressure. Although holes in some of the artifacts seem to have been drilled

¹A similar, but larger, specimen of nearly the same shape was found on a Tionontati site on lot 12, con. VII, Notawasaga tp., Simcoe co. (*See Orr, 4: 100*); and another comes from a Neutral site on lot 17, con. X, Bayham 'p., Elgin co., Ont. (Cat. No. VIII-F-5787, Nat. Mus., Canada).

²*See Parker, 2, fig. 9, and pp. 53-54, who was the first to record their use for this purpose; also Waugh, Pl. VI, fig. c.*

with drill points of stone, no objects that would seem to have been specially made for the purpose were discovered here. Very few drill points, also, are found in Iroquois sites in New York (Parker, 6:107), but they are common in early Huron sites in Victoria county and in Neutral sites in southwestern Ontario, where the writer found sixteen specimens on five sites in Blenheim township, Oxford county, of which as many as eight specimens were from a single site. No grooved axes, stone gouges, or native copper adzes, characteristic of the Algonkian culture, were found.

The stone adzes and the tools made of bear and beaver teeth were probably used in woodworking; the hammers and whetstones were no doubt employed in the manufacture of stone, bone, and antler objects.

There is no doubt that some tools and handles for adzes and knives were made of wood, but of this, owing to the perishable nature of the material, no actual evidence could be discovered.

ANTLER WEDGES OR CHISELS

Seven antler tines, with the tips ground to a wedge-shape, may have been used either as wedges to split pieces of wood or to loosen the bark of trees (Mason, 1), or as chisels. Two specimens have a narrow wedge-shaped tip; the tip of another is about $\frac{3}{8}$ inch wide. The edge of the one seen in Plate XIV, figure 5, has been ground more from one side than the other. None of the wedges is perforated. They differ from the wedges made of wide, thin, and more or less flat pieces of antler found at what may be post-European Neutral sites in Brant county, Ontario (See Boyle, 5, Figure 74).

Similar antler wedge-shaped tools have been found at Onondaga sites in Jefferson county, New York (Skinner, 4:139); and at what are probably early Huron sites in York and Victoria counties, Ontario; at Neutral sites in southwestern Ontario; and at an Erie site (Parker, 1, Plate 35, figures 2 and 4) and an early Seneca site in New York (Parker, 4, Figure 11, 4).

STONE ADZES

There are fifteen more or less whole, and seventy-three broken, stone adzes; twelve others are in Mr. White's collection. Eight are merely small fragments; twenty-two fragments consist of polls; and twenty-four others are fragments of the lower part of the blade, thirteen of them with the cutting edge intact. A small part of the upper end of eight specimens is missing; two other nearly whole blades have only a small part of the cutting edge missing; another, although otherwise unbroken, has the cutting edge dulled by battering; and seven others have other parts of the blade missing. The back of most of the blades is flat; i.e., the blade is asymmetric as viewed from the narrow side. The front of some blades is extremely convex from end to end; this side of most of them, also, is more convex from side to side than the back. One specimen has the corners of all the long edges chamfered (Plate XIV, figure 14). Most of the more complete specimens are broader at the cutting end than at the poll (Plate XIV, figures 11 and 12). Two specimens have cutting edges at each end, one edge on the one seen in Plate XIV, figure 13, being straight and the other curved. The cutting edge is straight on nineteen blades and curved on twenty-seven

others. The blades vary in length, the smallest being $2\frac{1}{8}$ and the largest (Plate XIV, figure 11) $4\frac{1}{2}$ inches long; some of the broken specimens, however, may have been much longer. The thickness of the blades varies from $\frac{3}{8}$ inch to $1\frac{5}{8}$ inches, and the width from $\frac{7}{10}$ inch to $2\frac{1}{2}$ inches; one of the unfinished specimens is $3\frac{1}{8}$ inches wide. Most of them are oblong in cross-section; two are somewhat oval, but none is round. Seven of the apparently finished blades are smoothly finished. The cutting edge is the only part that is completed on eight blades, and there are thirteen other specimens with only the narrow sides and the cutting edge finished; the poll of eighteen specimens was left in the rough. The edges of the groove across the front of the adze seen in Plate XIV, figure 15, are distinctly polished, probably from the chafing of the lashing that secured the blade to the handle. Two blades had the poll battered after they became broken and another was afterwards used as a hammer. Two others seem to have been used as paint crushers, unless the paint was applied to them for ceremonial reasons.

Adzes were as common here as at early Huron sites in Victoria county and Neutral sites in southwestern Ontario.

The methods of manufacture of adzes can be learned from twenty-six incomplete blades and some of the apparently finished specimens. Eleven of the unfinished forms are merely oblong masses of rock, mostly of hornblende schist, roughly broken into shape; one is a natural, waterworn mass, like an adze blade in shape, showing marks of chipping and pecking; four forms have been chipped and pecked into shape (Plate XIV, figure 16); seven fragments of other forms show evidence of having been chipped and rubbed; three others, in addition to being chipped, pecked, and rubbed into shape, have a suggestion of what was to become the cutting edge; and the evidences of manufacture on another specimen have been obliterated by weathering, but one end has been brought to a wedge shape. A few of the finished blades retain traces of the earlier stages in their manufacture. Three of them (Plate XIV, figure 12) were suitably shaped pebbles, which merely required the production of a cutting edge and a little smoothing to make useful tools. Five broken blades with the cutting edge battered, and one with the angles of the broken end rounded by battering, are in process of being reworked.

BEAVER INCISOR CHISELS

Eighteen more or less artificially modified lower incisor teeth of the beaver were probably used as chisels. Nine of them have the root end broken off and seven others have this end cut squarely off and smoothed. Four of these specimens have the natural bevel of the cutting end slightly modified by rubbing. One of the teeth has been converted into a hollow, gouge-like tool by removing the back or concave side of the tooth, exposing the neutral cavity, and grinding the natural straight cutting end to a convex edge. Another (Plate XIV, figure 1) had about half of the tooth cut off and the severed end has been bevelled to correspond with the bevel on the

natural cutting end, probably to facilitate lashing to some sort of handle. Similar tools made from beaver incisors by cutting off the root have been found at other Iroquoian sites in Ontario and New York, and at sites of other cultures in the United States, in Nova Scotia, and among the Eskimo.¹

These slightly modified beaver teeth were probably all set in handles and may have been used in carving and in fine woodwork. According to Sagard the Hurons used beaver teeth to smooth their bowls made from knots of wood (1:227). Hennepin says: "When they would make Platters, or wooden Spoons, or Porringers, they drill their Wood with their stone Hatchets, and hollow it with Fire, and do after scrape it, and polish it with a Beaver's Tooth" (II, page 527).

WHETSTONES OR GRINDING STONES

Thirty-seven smoothed pieces of stone, consisting mostly of thin slabs, may have been used as whetstones, grinding stones, and polishers. They are made of limestone, slate, claystone, and sandstone, most of them being of the last-mentioned material. Some of them seem to have been flattened and smoothed by constant usage, and others appear to have been purposely prepared for use. Two of them are worn on two narrow edges only; seventeen were used on one side only; eight on two sides, one of them being deeply hollowed; three on three sides; and six on four sides. The one in Plate XIV, figure 18, has a number of grooves on one side that may be the result of sharpening the points of bone awls and other pointed bone and antler objects. One of the slate specimens has the edges chipped and then smoothed. Smoothed areas on the sides of the large, engraved stone object in text Figure 3 probably also resulted from use as a whetstone. The sandstone object in Plate I, figure 34, may have been used as a grinding stone.

KNIVES MADE OF BEAR TEETH

Twelve whole and two broken objects are made from canine teeth of the bear (*See* Plate XIV, figures 2 and 3). The grinding of two of them seems to have been only commenced; three are rubbed down at a slant at the enamelled end; and eight are ground down to about half the original thickness, and flattened from end to end, exposing the neural cavity of the tooth (figure 3). The enamelled end of one of these flattened specimens has been ground to a sharp edge on each side; one has the enamelled part opposite the flattened side ground; another has the front part of the enamelled end of the tooth ground off at a slant and part of the root has been removed by scoring and breaking. Both edges of these blades are fairly sharp. The cutting edge on the object seen in figure 2 is of an unusual shape. One of the specimens looks as if it had often been re-sharpened, as only a small part of the enamelled end of the tooth remains. These objects were probably used as knives; they may also have been arrow-shaft smoothers; Skinner (4:131) suggests that they may have been used for smoothing pottery.

These bear tooth knives seem to be peculiar to the Eastern or Mohawk-Onondaga group of Iroquois, for none has been found at Neutral, Erie, or

¹ A specimen from Norton sound, Alaska, is seen in Hawkes, Plate XXIII, fig. A, b.

Seneca sites. Specimens have been found at sites of the same culture in Jefferson county, New York (Skinner, 4:130-131, and Parker, 6, Plate 36, figure 4), and in Vermont (Perkins, 3, Plate XXXIV), but none at Hochelaga. Ten specimens were discovered at what are probably early Huron sites in Victoria county, Ontario (Boyle, 14, Figures 6 to 8).

KNIVES MADE OF INCISOR TEETH

Besides being used as chisels, as mentioned above, forty-three incisor teeth of the beaver, six of the porcupine, and one of the woodchuck were made into two different kinds of blades for knives. One kind consists of teeth that have either been ground, or split and ground, from end to end until sharp on both edges of the tooth, in some cases being ground down to less than half their original thickness. Forty-one are of this type, eighteen of them being made of upper incisors and sixteen of lower incisors of the beaver, two of upper and four of lower incisors of the porcupine, and one of the lower incisor of the woodchuck. The other kind, of which nine were found, consists of split teeth, which, in addition to having the broken edges smoothed, have the chisel-like edge of the tooth rubbed down laterally to a point almost triangular in cross-section. The edges of knives of both kinds seem to have been dulled from continual use.

Knives made of the same kind of teeth, especially those of the beaver, have been found at sites of the same culture as Roebuck in Jefferson county, New York (Beauchamp, 4, Figure 178), and in Vermont (Perkins, 3, Plate XXXIV); at early Huron and Neutral sites in Ontario; at an early Seneca site in Ontario county, New York (Parker, 4:28); and in Algonkian shell-heaps in Nova Scotia (Smith, 3, Plate XVI, figures 15-27).

The method of manufacture of these knives from teeth can be learned from some of the specimens. As it was difficult to split the teeth lengthwise, especially the upper incisors, many were transformed into blades entirely by grinding, the incomplete specimens showing various stages of progress, from those that were only slightly ground on the inner, flat side of the tooth to others so thin that even the neural cavity was obliterated. Other teeth were split before they were ground.

STONE KNIVES

Knives were almost indispensable in shaping or carving wooden, bone, antler, and shell artifacts, but no stone artifacts specially made for the purpose were found. It is probable, however, that some of the arrow-points may on occasion have been used, and also sharp chips of chert and quartz crystals, of which several pieces were found. The sharp edges of some of the chips would readily cut pieces of bone and antler, especially if the antler were first softened by boiling in water. It is probable that a chert chip blade was inserted in the narrow socket of the antler handle seen in Plate XIV, figure 10.

HANDLES FOR KNIVES, ETC.

Several objects made of antler may be provisionally classed as handles for various implements (*See* Plate XIV, figures 6 to 10). They are of four different kinds, the simplest kind (Cat. No. VIII-F-12855) consists of a

piece of antler about $4\frac{1}{2}$ inches long, and about 1 by $\frac{3}{4}$ inch in diameter and oval in cross-section, with a conoidal socket, $1\frac{1}{8}$ inches deep, for the reception of some kind of tool in the larger end. On one side of the smaller end of another simple type of antler handle (Plate XIV, figure 10) is a long, narrow socket, about $\frac{5}{32}$ inch wide and $\frac{1}{4}$ inch deep, for the reception of a blade, in which respect it is like the handles of some Eskimo knives. Part of the socketed end of this handle has been ground flat. Three other antler handles have sockets cut into the sides, apparently for the reception of beaver tooth chisels or knives. One of these (Plate XIV, figure 6), made from a curved section of an antler, and, as is suggested by the marks of cutting on both ends, unfinished, has an oblong, deep socket about $1\frac{3}{8}$ inches long, $\frac{3}{8}$ inch deep, and wide enough to receive a beaver incisor. Another handle consists of an antler beam with a shallow groove cut into the side at one end, apparently also for the reception of a beaver incisor, the curve of the handle being in the same direction as that of the tooth (Plate XIV, figure 7). The handle in Plate XIV, figure 8, has a curved socket, about $\frac{1}{4}$ inch deep, for the reception of a beaver incisor chisel or knife. The tooth was probably held in place by lashing after gluing or gumming it in place, the base of the socket holding the tooth against the major movement resulting from its use. There is a hole through the handle about one-fourth of the way down from the top, but its edges show no signs of wearing. Fifteen other handles, most of them apparently in process of manufacture, and some in a broken condition, are of another type. All of those that are sufficiently whole to enable one to get an idea of the shape, have sockets at the largest end; this end in some cases being part of the beam, whereas the more slender part is that of the tine. Twelve specimens have a perforation through the handle at right angles to the socket, the hole in one of them being considerably worn, probably from the chafing of the thong that held the tool or blade in place in the socket. The socket of one handle was made by sawing from the narrow sides, leaving a long, narrow cleft. Other sockets were made by removing the soft, cellular part of the antler, the material possibly being first softened by boiling in water. In three handles the socket extends beyond the transverse holes; it is very deep on the apparently unfinished specimen seen in Plate XIV, figure 9. One handle, made from a tine $9\frac{1}{2}$ inches long, retains the slightly used, or perhaps worked tip. The smaller ends of five other specimens have been left in a broken condition; another has the point severed by scoring and breaking. The blades for which these handles were made were probably held in place by lashing with a thong, as it is scarcely likely that the transverse holes were intended for the reception of a pin; but it is hard to say what kind of blades were inserted in these handles. The only objects with ends that would fit some of the sockets are the perforated bear canines described under "Pendants," the pointed ends of which may have been used to make lines on pottery. The writer knows of no other artifacts of the same type from Iroquoian sites in Ontario, but a somewhat similar specimen, described as a knife handle, was found at a Cayuga site in New York (Skinner, 4, Figure 9).

SCRAPERS

Instead of being used in tanning, as suggested below, the scraper blades chipped from chert and chalcedony may have been used in woodworking and in shaping pieces of bone and antler.

HAMMERSTONES

Twelve hammerstones made of quartzite, limestone, granite, and gneiss were found. Three of them have flattened sides and conoid battering edges, and were probably used in pecking or bruising pieces of stone into shape before grinding (Plate XIV, figure 17). Six specimens are cobbles, of a size and shape easily held in the hand, and have peripheral abrasions. Two others, in addition to the battered edges, have one or both sides slightly flattened. A much battered, broken stone adze seems to have been long used as a hammer. The pitted specimens described as mullers above, were probably also sometimes used as hammers, the pits in the sides affording convenient holds for the thumb and forefinger while in use.

Hammerstones were as numerous here as at Neutral sites in southwestern Ontario.

GROOVED STONE HAMMERS

No grooved stone hammers were found, although they may have been used by the people of the site; one is said to have been discovered at the site of Hochelaga.¹

IMPLEMENTS USED BY WOMEN

Tools used in work usually performed by women among the Indians consist of clam shells and other implements probably used in pottery making; scrapers of stone and bone used in tanning; awls and needles used in sewing, weaving, and snow-shoe making; and a possible spindle-whorl used in spinning.

CLAM SHELL TOOLS

A few clam shells with the edges worn and others with the sides worn down may have been used as scrapers and smoothers in shaping pottery vessels.

SPATULATE BONE TOOLS

Spatulate bone tools like those in Plate XVII, figures 2, 3, and 5, and the implement in figure 18, in the same plate, were probably used in shaping the rims and in making the lines and other decoration seen on pottery.

SCRAPER BLADES CHIPPED FROM STONE

Five scrapers were found; four are chipped from chert, and one from a whitish stone resembling chalcedony (Cat. No. VIII-F-13785). They are all plano-convex (Plate XIV, figure 20). Some of them are crude, one being of an irregular shape; another seems to have been of a triangular

¹Dawson (2: 372), probably referring to a grooved stone hammer resembling those of the Plains Culture Area, in the Dawson collection, Peter Redpath Museum, Montreal.

shape before it became broken; still another appears to be a fragment of some larger implement with the broken edge at the narrow ends rechipped for use as a scraper. The object chipped from cherty limestone, seen in Plate XVII, figure 12, may also have been intended for a scraper.

Besides the scrapers chipped from stone, there is a spall broken from the side of a pear-shaped pebble with the broader edge showing chipping, which may have been used as a scraper. It resembles the teshoa scrapers used by the Shoshoni, the West Coast Indians, and the Eskimo, although it is much smaller.

These scrapers, like the arrow-points chipped from stone, were much less common here than at Neutral sites in southwestern Ontario, where one site alone yielded fifty specimens (*See* author, 8:26). They are also scarce at sites of the same culture in Jefferson county, New York (Skinner, 4:166), and at early Huron sites in Victoria county, Ontario.

BONE AWL-LIKE IMPLEMENTS

Pointed, awl-like bone implements were more plentiful than any other artifact made of this material, one thousand two hundred and ten being found, and there are twenty others in Mr. White's collection. Several specimens are shown in Plate XIV, figures 21 and 24 to 32.

Their use as awls for punching holes in skins and possibly for basket and snow-shoe making is suggested by the general shape of most of them, but they may have been used for many other purposes.

These awl-like objects are common archaeological finds, especially in Iroquoian sites. Their occurrence here in such abundance suggests that they were one of the most indispensable implements. How necessary they seem to have been is evidenced by the fact that even after the arrival of Europeans, awls (of iron and of white manufacture, of course) were considered one of the important articles of trade with the Indians, as we learn from the *Jesuit Relations* (VII, 223, X, 177, 249, XII, 119, and XVIII, 19).

Most of these implements are in a good state of preservation, the bone in many instances looking probably as fresh as when the awl was discarded or lost. Many are highly polished, some of them evidently from long handling. Fifty-five specimens are scorched. Surprisingly few are broken, five hundred and fifty or a little more than 46 per cent being whole; many of the broken specimens have only the tips missing. One cannot help but wonder, if these awls were lost or discarded, as seems probable, why there should be such a large proportion of perfect specimens found. Mere loss would hardly seem to account for so many finding their way to the refuse deposits; besides, one would expect the proportion of broken awls to be much greater owing to breaking during their careless removal with kitchen debris.

The awls range in size from the smallest, $1\frac{7}{8}$ inches long, to the largest which is $8\frac{3}{8}$ inches long; the most common lengths ranging from $2\frac{1}{2}$ to $5\frac{3}{16}$ inches; but the longest are exceeded in length by other awls found at Iroquoian sites elsewhere in Ontario. Some are only about $\frac{1}{8}$ inch thick.

Very few of the bone awls found here suggest by their shape that they might have been hafted. We know that iron awls of European introduction, found in sites in southwestern Ontario, were mounted in bone handles,

so it is possible that some of our double-pointed specimens, especially the very short ones, may have had one of the sharpened ends inserted in a handle.

These awl-like implements are made of fish, bird, and mammal bones, but none is of antler, unless a few massive, pointed objects and the specimen in Plate XIV, figure 23, were so used. One thousand one hundred and ninety-three awls are made of mammal bones, of which about one thousand one hundred and fifty-six are deer, which accords well with the preponderance of the bones of this animal over that of any other found at the site. Most of them are made from pieces of the larger leg bones, comparatively few being derived from the readily adaptable ulnæ and splint bones. Of those derived from ulnæ four retain the proximal part or olecranon process as a handle, and the sigmoid cavity formed a convenient rest for one of the fingers. Three specimens are made of human ulnæ, one (Plate XIV, figure 24) with the tip missing, one with the olecranon process cut off, and another a fragment of the sharpened distal half of the shaft.

These implements may be divided into four different types or classes.

First we have specimens made of bones showing very little artificial modification beyond the production of a sharp point at one end (See Plate XIV, figures 22, 25, and 26). Those derived from fish bones are probably the simplest, but their use as awls may not have been extensive. The specimens made of bear (Plate XIV, figure 25) and human ulnæ are certainly too large and heavy for use as sewing awls, but they may have served either for punching holes in birch bark or as snow-shoe punches.

The second type of awls consist of those that, although they show more artificial modification than those just considered, still retain some joint or other recognizable part of the animal bone from which they are derived (Plate XIV, figures 29 to 32). Three hundred and forty-eight, or about 28 per cent of the total number of implements of this class, retain part of the joint or articular end, and nine hundred and six, or about 78 per cent, retain the marrow hollow on one face. Eight specimens are derived from hollow bones. Even such unpromising-looking material as parts of lower jaws of the deer was utilized in a few cases; one of the awls derived from the anterior part of a left jaw retains the premolar alveolæ and the marrow hollow, and two others appear to be made from the bulging basal part of the jaw to which the digastric muscle is attached (a few jaws have this very portion missing). Awls made from pieces of deer jaws are seldom found in Iroquoian sites elsewhere in Ontario and in New York, and they also seem rare in sites of other cultures. Two specimens made from pieces of deer metapodials (Cat. Nos. VIII-F-10017 and VIII-F-12896a), one of which has a broad, somewhat flattened tip and bifurcate base, retain the natural hole probably for the attachment of a cord. Some of the awls are crude and crooked, although the natural curve of the bone in some cases formed a good hand hold. A specimen with two deep notches on one edge is seen in Plate XIV, figure 32. Some of them are square in cross-section, others rectangular, and one pentagonal (Cat. No. VIII-F-11786).

The third class consists of those made by merely pointing rough splinters, probably such pieces as resulted from the breaking of bones, to get the marrow; two hundred and eight specimens are of this type.

The fourth class of awls consist of those whose shape is wholly or almost wholly factitious, but only a few are symmetrically proportioned. Four specimens are round in cross-section, eleven are oval, one is elliptical, and one is curvilinear-triangular.

Four hundred and ninety-four specimens have finely attenuated tips (*See* Plate XIV, figures 21, 29, and 32), four hundred and ninety-eight have medium sharp points (*See* Plate XIV, figures 22 and 30), and twenty-six others have blunt tips (*See* Plate XIV, figure 27). Sixty-three specimens have wide, flattened tips, and they may have served for some other purpose than awls (*See* Plate XIV, figure 31). The one illustrated in Plate XIV, figure 21, has a peculiarly shaped point. Fifteen specimens are pointed at both ends and some of them may have been hafted.

Five specimens, including one in Mr. White's collection, have the base notched as if for the attachment of a cord.

Eighteen others, three of which are seen in Plate XIV, figures 27, and 29 to 31, are decorated (*See also* under "Art").

No awls made of copper were found, but some made either of this metal or brass are said to have been found on a site about 5 miles southeast of the Roebuck site.

The manufacture of awls is illustrated by some of the specimens found. Many of the animal bones, especially ulnæ, radii, and fibulæ required very little working to transform them into awls, it being merely necessary to break off one end and then grind the broken part to a point, the marrow hollow being exposed at the tip in each case. Many splinters resulting from the breaking of bones to get the marrow were of a size and shape suitable for manufacture into awls, and a few were ground to a point at one end; others have the broken edges smoothed, and still others have been brought to a more or less symmetrical form by grinding and polishing. The edges of some splinters were chipped before they were ground into shape; a few other pieces show both chipping and grinding. Some of the finished awls retain traces of longitudinal cutting on the edges, showing that the blanks from which they were made had been severed from the stock bone by grooving and breaking.

PERFORATED BONE NETTING NEEDLES

Five whole and thirty-two broken implements made of thin, slender pieces of bone were found (*See* Plate XIV, figure 33). A few are polished and others are scorched and blackened by fire. Twenty-nine specimens, a few of which may have been broken while making the perforation, were broken through the eye, and two others, although evidently parts of needles, retain no trace of the eye.

One specimen is made from what seems to be the branchiostegal bone of a fish, nineteen are made from rib bones, and the rest are derived from other kinds of bone, six of them being thick pieces, some of which retain the marrow hollow on one face. Those made from pieces of ribs are easily recognizable on account of the cancellated structure of the bone showing on one face, and also because of the curvature. One, apparently unfinished,

is a short section of a rib, pointed at each end, with a hole near the middle. Eighteen others are made from curved, split pieces of ribs; nine being derived from the dorsal-caudal or outer side and the others from the ventral-cephalic or inner side of the bone.

Twenty of these needles, especially those derived from ribs, are curved from end to end, one extremely so, whereas those made of thick pieces of bone are all more or less straight or flattened, in which respect they are like some of the needles used by modern Indians. The curved needles may have had a special advantage over the straight ones, because they could more readily be passed in and out among the meshes; in some cases, however, the curvature may be due to warping.

Most of the needles are widest near the middle, and the tips of all but a few are more or less obtusely pointed, probably so that they could be used either backward or forward; most of the modern specimens also have both ends obtusely pointed. They are from $\frac{3}{16}$ inch to $\frac{3}{8}$ inch wide, range in length from $3\frac{1}{2}$ to $5\frac{1}{16}$ inches, and are from $\frac{1}{16}$ to $\frac{1}{8}$ inch thick.

The eyes were made through the widest part of the needles, twenty-one specimens having oval eyes and two round. Most of them were made by gouging rather than drilling. The oval eyes in about half the specimens have the ends of the hole grooved, as in the eyes of modern steel needles and in that of Eskimo and Naskapi specimens (Turner, Figure 130). The oval eyes are from $\frac{3}{32}$ to $\frac{7}{32}$ inch long and from $\frac{1}{16}$ to $\frac{1}{8}$ inch wide, and the round ones are $\frac{3}{32}$ inch in diameter. The eye in one specimen (Cat. No. VIII-F-10884) is only about $\frac{1}{8}$ inch long and about $\frac{1}{32}$ inch wide, admittedly not large enough to hold even the finest snow-shoe line. Five specimens were re-perforated after they became broken. Seven of the needles have the eye nearer one end than the other. This is also the case in many of the needles from Iroquoian sites elsewhere in Ontario and in New York. The placing of the eye nearer one end than the other in our specimens appears to have been intentional, the shortest end, perhaps, being held between the fingers as the needle was passed in and out among the meshes; yet if this were so, we would expect the short end to be much more polished from use than the longer end, which is not the case.

Only eight specimens show signs of wearing in the hole, the one in the specimen illustrated probably more than the others, the wearing occurring at the end farthest from the longer part of the needle in four specimens and at the end nearest the longest part of the needle on another.

Although these implements are generally called needles, their width would preclude such a use, at least in the sense generally understood. Similar needles are used by the Eskimo, Naskapi, Montagnais, Malecite, and Penobscot in forming the netting of snow-shoes, and our specimens were probably used for the same purpose. It is possible, however, that those in which the eyes are too small to admit a snow-shoe thong may have been used in some fine textile work.

Their comparative scarcity here, and the fact that they are also scarce at other Iroquoian sites in Ontario and New York, would suggest that they were not extensively used. If used as snow-shoe netting needles, their occurrence would probably coincide with the known geographical distribu-

tion of the use of snow-shoes among the Indians in first-white-contact times. The needles do not seem to be found south and west of the state of New York, where snow-shoes were probably never used; in Ontario they occur at Iroquoian sites, which all lie well within the region where snow-shoes were a necessity.¹

SPINDLE-WHORLS

It is not known if the Iroquois² used such a device as a spindle, but the perforated, slightly concavo-convex wooden disk found in the muck surrounding one of the springs, illustrated in Plate XVII, figure 11, may have been used as a whorl to give momentum to a spindle. Another object, the shape of which is like some of the whorls used for the purpose elsewhere in America, is seen in Plate XV, figure 7. The hole through the middle of this specimen, however, is too small for the reception of a spindle and it is probably merely a bead.

WARFARE

There is no doubt that, like the other members of the Iroquois family, the inhabitants of the site were warlike. Besides the defensive earthwork and the traces of palisades described on page 7, a few objects that may have been used in warfare were found.

WEAPONS

Bows and arrows and war clubs probably constituted their chief weapons.³ Few arrow-points, however, as compared with articles of domestic use, were found, and most of these may have been used in hunting. A few of the stone points are of the triangular type generally called "war points." Most of the points are of bone and antler, some of which may have been used in warfare; human bones pierced with such points have been discovered in New York (Skinner, 1:149), Ohio (Willoughby, 1:131, and 2:51), and Kentucky (Moore, 10:468, 478-479). If they used daggers in warfare it is possible that two, long, sharpened antler tines, the large perforated object made from the ulna of a bear in Plate XVII, figure 28, and the pointed objects made from human ulnæ, one of which is seen in Plate XIV, figure 24, were so used. Small stone adzes may have been mortised into the heads of wooden war clubs.

BODY ARMOUR

In common with the Hurons (Sagard, 1:144), and the Mohawk encountered by Champlain in 1609, the people here may have worn body armour similar to that described by Van Curler, who says: "Some of them

¹According to Sagard (1: 104), the Neutral Indians in southern Ontario used snow-shoes.

²The Cherokee, according to Adair, spun wild hemp "off the distaffs, with wooden machines, having some clay on the middle of them, to hasten the motion" (pp. 422-423).

³De Vries (p. 95), speaking of the Mohawk, says: "The weapons in war were bows and arrows, stone axes and clap hammers"; the clap hammers were probably war clubs.

wore armour and helmets that they make themselves of thin reeds and strings so well that no arrow or ax can pass through or wound them" (Wilson, page 91).¹ They may also have carried wooden shields like those figured by Champlain (See vol. III, Figure A).

DRESS AND ADORNMENT

There were found several mineral substances that could have been used as face paint; stone objects that were probably used to prepare paint; a clam shell still containing red paint; an unfinished comb; pendants made of shell, bone, and teeth; and beads made of stone, shell, bone, teeth, and earthenware.

CLOTHING

Although we discovered no direct evidence, owing to the perishable nature of the material, it may be assumed that the inhabitants of the site were compelled to wear skin clothing in winter. We have the testimony of Cartier that the Hochelagans, who as has been pointed out above, had the same culture as the inhabitants of this site, made their clothing of the skins of "otters, beavers, martens, foxes, wild cats, deer, stags," and other animals, "but," he adds, "the greater portion of them go stark naked" (page 158). There is no doubt, also, that leggings and moccasins, made of tanned skins,² and others woven from corn husks³ were worn. Head coverings were probably made from the skins of some of the birds and mammals mentioned above, and vegetal fibres and sinews were no doubt used for sewing the skins together. The only object that gives a suggestion of a head covering is the human face mask from an earthenware pipe, seen in Plate XVI, figure 16, which has a raised band across the top of the forehead; this, however, may have been intended to represent the hair.

Although the discovery of part of a woven bag suggests the possibility that garments were made of woven fabrics, we have no historical evidence that any northern Iroquoian people wore clothing made from fabrics woven from native vegetal fibres.

It is possible that garments were ornamented with the feathers of birds, porcupine quills,⁴ and the hair of animals such as the moose. Pieces of mica, of which some unworked pieces were found, may have been cut into different shapes and used for the embellishment of clothing and headgear.⁵ The objects derived from the phalanges of the deer (Plate XV, figures 19 to 23) and the perforated shell (Plate XV, figure 8), may have been used as a rattling fringe around the edge of garments.

Some of the smaller, and more slender, pointed bone objects, described as awls, may have been used as pins for fastening clothing.

¹Champlain (vol. II, p. 222) says it was "woven of cotton thread and wood"; in vol. III, fig. E, he gives a picture of an Indian dressed in armour; See also, Beauchamp, 6, Pl. 11, fig. 59.

²Cartier (p. 181) apparently referring to the Indians of Stadacona, says: "In winter they wear leggings and moccasins made of skins, and in summer they go barefoot."

³Megalopensis (p. 154) says of the Mohawks: "They take the Leaves of their Corn, and plat them together and use them for Shoes." Corn husk sandals and moccasins were in use among the Senecas of New York until recent years (See Parker, 2: 82).

⁴The *Agouhanna* of Hochelaga "wore about his head for a crown a sort of red band made of a hedgehog's skin" (Cartier, p. 164), which, Lighthall (2: 94) thinks, was a "fillet of porcupine quillwork."

⁵Mills (1: 11) mentions strips of mica, discovered in the Adena mound in Ohio, which apparently were used for such a purpose.

TOILET ARTICLES

The inhabitants of this site, like other Iroquoian tribes,¹ probably greased their hair and faces, and painted their faces and bodies² with variously coloured paints derived from vegetal, earthen, and mineral substances. It was, of course, impossible for us to discover any evidence of the use of vegetal pigments, but a number of mineral and other substances, including a few pieces of red ochre and hematite, were found. Black paint was probably mostly derived from charcoal³ and soot,⁴ although pieces of graphite, a material used for the purpose by other Indians,⁵ were discovered here. That the mineral and other paint materials were in some cases reduced to powder by grinding them on a gritty stone is suggested by the rubbed pieces of hematite found; other pieces may have been crushed to a powder. Two stone celts, a hammerstone, and both sides of a small biconcave stone mortar, are partly covered with red paint and look as if they had been used as pigment grinders. The powdered paint was probably mixed with grease or oil before it was applied to the face or body.⁶ A large half shell of a freshwater clam has the inner surface still coated with red paint and was evidently used as a receptacle for the prepared paint.

The three transverse linear impressions on the nose of the human face mask from an earthenware pipe, seen in Plate XVI, figure 20, suggest that similar marks were painted on the noses of the Indians themselves; they may also represent tattooed markings.⁷

Some of the short bone tubes considered as beads, one of which is seen in Plate XV, figure 11, may have been used as hair spreaders, or to fasten the base of a feather as among some modern Indians.

Other toilet articles used by the people of this site were combs, but only an unfinished specimen, made from an oblong, concavo-convex piece of antler (*See* Plate XV, figure 1) was found. Marks of cutting can be seen on all but two of the edges. The method of producing the teeth seems to have been as follows: holes were first worked through the material and, from these, longitudinal channels were cut on both faces until all the intervening material was removed, after which the teeth were further reduced to shape. It is scarcely probable that the number of teeth the maker evidently intended to give this comb was suggested by the number of fingers of the hand. Other combs with five teeth have been found at Iroquoian sites in October.⁸ The broken specimen in Plate XVII, figure 8, and more fully described under "Problematical Objects," may be the head of a comb.

¹Father du Peron says of the Hurons: "They grease their hair and faces; they also streak their faces with black and red paint" (*Jesuit Relations*, XV, p. 155; *See also*, Bressani Relation, XXXVIII, pp. 249, 251).

²The underlying motive seems to have been ceremonial rather than æsthetic.

³Among the Indians of the lower St. Lawrence, widows blackened their faces with a mixture of powdered charcoal and grease (Cartier, p. 182).

⁴Bressani, speaking of the black paint of the Hurons, says: "Black they commonly take from the bottom of the pots" (*op. cit.*, p. 251).

⁵According to De Vries (p. 105) the Mohawks painted their faces with black lead.

⁶According to Champlain (III, p. 166) the Hurons mixed their colours "with oil made from the seed of the sunflower, or with bear's fat or that of other animals."

⁷The Hurons are known to have practised tattooing (*See* Bressani, *op. cit.*, p. 251).

⁸One was found in an early Huron site on lot 5, con. V, Bexley tp., Victoria co. (*See* Boyle, 14, fig. 47).

ARTICLES OF ADORNMENT

The articles of personal adornment consist of beads and pendants. Possibly, as among the Hurons,¹ the braids of hair were decorated with ornaments. Some of the finely polished bone objects described as awls may have been hairpins,² but the only awl found in a position that would suggest its use for this purpose, lay near the occiput of the skull of a woman in grave 40; this, however, was probably accidentally introduced into the grave, as all the graves in this part of the site were covered with refuse containing similar bone awls. No evidence of the use of nose ornaments was discovered;³ but the fact that the ears of some of the human face masks on earthenware pipes (Plate XVI, figures 16, 18, and 20) are pierced with holes, suggests that the practice of piercing the ears for the attachment of ornaments was common among the Indians; Father du Peron mentions the custom as existing among the Hurons.

Beads

The beads are made of stone, shell, bone, teeth, earthenware, potsherds, and pieces of broken pipe stems. A faceted, blue glass bead, found in the muck surrounding one of the springs at the site, is unlike any of the glass beads from seventeenth century Iroquoian sites in Ontario and New York, and was, therefore, probably dropped quite recently.⁴

Discoidal Stone Beads. Ninety-one beads, of which more than half are in Mr. White's collection, are made of stone; seventy-seven being made of soapstone of various colours, seven of limestone, four of sandstone, and three of slate. One of the beads is almost spherical (Cat. No. VIII-F-9181) and the rest are flat, discoidal forms (Plate XV, figure 5), but none is uniformly circular. The diameter of the beads varies from $\frac{5}{16}$ inch to $1\frac{1}{16}$ inches, but the majority are about $\frac{1}{2}$ inch; and they are from $\frac{1}{16}$ inch to $\frac{1}{2}$ inch thick. Most of the holes, very few of which are exactly in the centre, are biconcave and are from $\frac{1}{16}$ to $\frac{3}{16}$ inch in diameter. The only decorated bead had grooves around part of its periphery (Cat. No. VIII-F-10082). Most of the soapstone beads are highly polished.

The manufacture of these discoidal stone beads is illustrated by twenty-seven specimens (ten of them being in the White collection) which include: two partly worked pieces of soapstone and two of slate; seventeen roughly circular disks that are probably unfinished, the flat sides of three retaining the striæ resulting from the rubbing process; and three with the hole commenced on one face, and six others showing the beginnings of holes on both faces. Judging from the appearance of some of the specimens, the final polishing was not attempted until after the hole was drilled. The periphery of the beads was smoothed and finished off either straight or round by rubbing, probably on some of the flat pieces of rock considered as whetstones.

¹Father du Peron, op. cit., p. 155.

²Mills (2: 48) suggests that large, double-pointed bone and antler awls, found directly below some of the human skulls in the Gartner mound in Ohio, were hairpins.

³The Jesuit missionaries do not seem to have noticed this custom among the Hurons or Neutrals; Champlain (III, p. 116) says the Cheveux Relevés, Algonkian neighbours of the Hurons, pierced their noses for ornaments.

⁴A string of smaller beads of this type, some of which are of the same colour, was found in a grave of what was probably a Wyandot Indian, near Amherstburg, Ont.; they are Cat. No. VIII-F-2362, Nat. Mus., Canada.

Cylindrical Stone Beads. No cylindrical beads made of stone were found, but they have been discovered at other sites of the same culture elsewhere in this part of the province.¹

Copper Beads. No beads made of native copper were found.²

Shell Beads. Six beads are made of shell, two of them being shells of a freshwater snail (*Campeloma decisum*) with a suspension hole broken through the lip (Plate XV, figure 8). Shells of this snail, similarly perforated, have been found at Iroquois sites elsewhere in Ontario and in New York. The other beads (Plate XV, figures 9 and 10) are made from the columella of large ocean shells; all but one, which is fragmentary, retaining the spiral groove of this part of the shell. Most of them show the effects of burial in the ground and exposure on the surface, and they are in a more or less chalky condition. The smallest specimen is $\frac{1}{2}$ inch long and the longest is $2\frac{1}{8}$ inches. The hole in three of the specimens is smooth throughout, but larger at the ends than in the middle; that in the bead seen in figure 9 shows the striæ left by the drill. The scorings around the end of the bead in figure 10 were perhaps intended to be ornamental.

Cylindrical shell beads are said to have been numerous at a site of the same culture, on lot 11, con. III, Augusta tp.; they are more numerous at post-European Huron, Tionontati, and Neutral sites in southwestern Ontario and in Iroquois sites in New York.

No discoidal beads made of shell were found, but the discovery of small specimens at a site of the same culture, on lots 26 and 27, con. III, Edwardsburgh tp., Grenville co. (Cat. No. VIII-F-9143, National Museum), and at the site of Hochelaga (Dawson, 3, Figure 28), besides a few at an Onondaga site in Jefferson county, New York (Skinner, 4:163), suggests that such beads were perhaps known to the people of the Roebuck site.

Two worked pieces of marine shells suggest that these beads were made here; although it is possible that some of them reached the site in a finished state.

Earthenware Beads. Thirty-two modelled earthenware beads, including three found by Mr. White, appear to be made of the tempered clay used in the manufacture of pottery. Twenty-five specimens are discoidal (Plate XV, figures 6 and 7), all but two having rounded peripheries; one is more or less spherical; and two are shaped like an oblate spheroid. Only a few are well finished, and few have the holes centrally placed. The smallest is about $\frac{9}{16}$ inch in diameter and about $\frac{3}{16}$ inch thick, and the largest (figure 6) is $1\frac{3}{16}$ inches in diameter and about $\frac{7}{16}$ inch thick; the holes are from about $\frac{1}{8}$ inch to $\frac{3}{16}$ inch in diameter. Only one of the beads is decorated (figure 7), both faces having a crudely drawn circle more or less parallel with the edge. None of them has the crenated periphery seen on earthenware beads found at Hochelaga (Dawson, 3, Figure 28), and at a site in Victoria county.

¹One comes from a site on lot 11, con. III, Augusta tp., Grenville co. (Cat. No. VIII-F-13572, Nat. Mus., Canada) and another from a site on lot 34, con. I, Osnabruck tp., Stormont co., Ont. (See Wintemberg, 9, Plate XII, fig. 10). There is also one of limestone from an early Huron site, on lot 22, con. II, Eldon tp., Victoria co.

²According to Dawson (3: 165) a few copper beads were discovered at the site of Hochelaga. There is a tubular bead of brass, not copper, from that site in the Ludger Gravel collection (No. 59), Museum of the Canadian Antiquarian and Numismatic Society, Montreal, which may be one of these referred to by Dawson. The museum catalogue describes it as a "bugle bead, made from Lake Superior native copper." Two cylindrical specimens of native copper are reported from a prehistoric Onondaga site in Jefferson co., N.Y. (Skinner, 4: 19, 29-30).

Four more or less spheroidal nodules and a flattened, oval earthenware nodule, about the same size and shape as some of the beads described above, but lacking the hole, are either abortive attempts to make beads or were intended for some other purpose.

Modelled earthenware beads have been found at sites of the same culture in Ontario and New York (Skinner, 4:149) and at other Iroquoian sites elsewhere in Ontario and New York (Beauchamp, 2, Figures 236 to 238).

Beads Made of Teeth. Only one of the beads is made of a tooth (Cat. No. VIII-F-12350). It is a polished canine of a dog with the longitudinal neural cavity exposed by grinding off both ends of the tooth. Beads of this kind are rarely found at other Iroquoian sites.

Beads Made of Broken Pipe Stems. Two beads were made from short sections of the broken stems of earthenware pipes by smoothing the broken ends. Similar beads have been found at Onondaga sites in Jefferson county, New York (Skinner, 4:149, and Parker, 6:337), and at early Huron sites in Victoria county, Ontario.

Cylindrical Bone Beads. Forty-three beads were made from short sections of hollow bones (See Plate XV, figure 11). Most of them are well preserved and many still retain considerable polish; a few are fragmentary. Thirty-six are made of bird bones, sixteen being from ulnæ, most of which retain the row of elevated muscular attachments characteristic of this bone; eight are from humeri; three from radii; and three from tibio-tarsi, one of them retaining the fibular ridge of the bone; six others are derived from unidentified bird bones. Mammal bones furnished material for only a few beads, two being derived from femora, two from humeri, and another from an unidentified bone. Most of the beads have the ends unevenly severed; but even some of those with uneven ends are polished and evidently were finished, the ends apparently having become rounded by wear. The inner edge of a few specimens is worn from the friction of the cord on which they were strung. The shortest bead is $\frac{11}{16}$ inch and the longest is $2\frac{5}{16}$ inches long; the diameter varies with the kind of bone used, one made from a bird's radius being $\frac{3}{16}$ inch, whereas that of one apparently made from the humerus of the Canada goose is $\frac{5}{8}$ inch.

None of the beads shows incised or other kind of decoration, although it is possible that the scoring around the middle of the specimen illustrated was intended to be ornamental; no beads, also, show that colouring matter had been applied to them, as on a bead from a Huron site in Victoria county (Boyle, 11, Figure 30).

Bone beads were as abundant here as at Neutral sites in southwestern Ontario.

The manufacture of these bone beads can be illustrated by some of the specimens found, twenty-three of them being derived from bird bones, eight from those of mammals, and two from human fibulæ and one from a human radius; there are also many unworked bones. A few bones have the extremities merely broken off, others had them removed by scoring and breaking. The severed ends were afterwards smoothed by rubbing,

probably on some of the specimens described as whetstones. The scoring seen on the sides of two out of six long specimens derived from bird bones (mostly humeri), suggests that they are probably in process of further subdivision into short beads.

Discoidal Bone Beads. No discoidal beads made of thin pieces of bone were found; they are rare at Iroquois sites elsewhere.¹

None of the larger fish vertebræ was artificially perforated for use as a bead.

Pendants

Several objects found here were probably used as pendants, some of them perhaps being strung with some of the beads described above.

No pendants made of thin, round or oval pebbles, common at Neutral sites in southwestern Ontario, were found. There were also no pendants of shell, unless the perforated shell of the pond snail on Plate XV, figure 8, can be so considered.

A periotic bone of the deer may have been a pendant; at least the polished surface suggests some such use.

Five pendants were made of teeth. One of these, a bear canine (Plate XV, figure 2) has part of one side slightly flattened and the root end notched for suspension. Notched bear canines have been found at early Huron sites in York county, Ontario, and at Onondaga and Mohawk sites in New York; at Roebuck there was a canine of a raccoon, with the root similarly notched for suspension (Cat. No. VIII-F-14087). Two other canines of the bear, one of which is seen in Plate XV, figure 3, have a suspension hole through the root, as in other bear teeth from Iroquoian sites elsewhere in Ontario and New York. A perforated, highly polished tooth of the wapiti is seen in Plate XV, figure 4. Perforated teeth of this animal have also been found at other Iroquoian sites.

Some of the perforated objects made from phalanges of the deer (Plate XV, figures 19 to 23) may have been used as pendants.

Gorget

It is possible that the stone gorget, described on page 74, and also those derived from pieces of human skull (Plate XV, figures 32 and 33), were worn as ornaments.

Wristlets

No wristlets or armlets made of bone or antler were found, but their use is suggested by the discovery of a fragment of what appears to have been one of these objects, at a nearby site (See Smith, 2, Plate LXXVIII, figure 3).

Bracelets may have been made of strings of shell,² stone, and bone beads.

¹The writer found two specimens on Neutral sites in Waterloo and Oxford counties, Ontario (1: 274).

²Cartier (p. 252) mentions the use of "bracelets made of Esnoguy," by the people of the lower St. Lawrence, who were probably related to the people of this site. Father du Peron, op. cit., p. 155, says the Hurons wore "bracelets of porcelain."

GAMES AND AMUSEMENTS

Articles probably used in games and amusements consist of toy pottery vessels, disks of stone, earthenware and potsherds, bone units for cup and pin games, and flattened deer phalanges.

CHILDREN'S TOYS AND AMUSEMENTS

Small pottery vessels, such as those seen in Plate II, figures 4 and 5, were probably made by children in imitation of their elders, and used as toys. The spoonlike object made of earthenware in figure 3 in the same plate, and the small earthenware figurine in Plate XV, figure 30, probably also were toys. Astragali of the deer may have been used as buzzers, as among Plains Indians (Culin, 2:751). Whistle-like objects, made by breaking a hole through the front of middle phalanges of the deer, may also have been used for amusement.

GAMES

There are a number of objects that were probably used in games.

It is doubtful if any of the deer astragali, found here, were used as dice in a game; at least none of them shows any polish due to handling, or artificial modification. Considering their employment by other Indians¹ it seems strange that their utilization did not occur to the people here.

No cylinders of bone or antler, corresponding to those of wood, used in what is called the "stick game,"² or as counting sticks (Culin, 2:230) in certain other Indian games, were found. Four metacarpal or metatarsal bones of the hare, however, found together in a clam shell, and polished on the shaft and distal articular ends, may have been used as counters; Culin speaks of radial bones of birds being used for the purpose (2:156).

Some of the longer bone tubes considered as beads may have been used in a game.

Disks

Small disks were chipped and rubbed from stone and potsherds and modelled from pottery clay. There is also a charred wooden disk-like object.

Eighteen disks, mostly with irregular peripheries, are made of stone; three of them being merely chipped into shape and the rest having the edges more or less smoothed by grinding (*See* Plate XV, figures 12 and 13, showing degrees of finish). Twelve are made of shale, one of slate, and six appear to be of limestone, one of the latter being derived from a round, flattened, waterworn pebble. They vary in diameter from $\frac{7}{8}$ inch to $2\frac{1}{8}$ inches and are from $\frac{3}{16}$ to $\frac{9}{16}$ inch thick. None of the disks is perforated and none of them, also, bears markings, like some from Huron sites (*See* Boyle, 8, Figures 25, 26).

¹Culin (2) illustrates two astragali used in games (figs. 155 and 169). Elsewhere (Boyle, 10: 22) he says: "The astragalus, I believe, was employed in games before white contact, but even here the evidence is not conclusive." Moore found astragali of a deer, an elk, and a bison, rubbed to an almost cuboidal shape, probably for use as dice, in a grave, in Mississippi county, Arkansas (*See* 5, fig. 63).

²*See* Culin, 2: 228, 229, 233-238, 240-252, 254, and 256-266. We know from Nicolas Perrot (p. 46) that a form of a "stick game" was in use among the Hurons.

Stone disks are common at Tionontati sites in Grey and Simcoe counties, and at Huron sites in Simcoe, York, and Victoria counties. They are especially numerous at sites in the latter county, seventy-four specimens in the Royal Ontario Museum of Archæology, Toronto, coming from the townships of Bexley, Eldon, and Fenelon. Perforated disks, although not so numerous as the imperforate ones, are found at sites in Simcoe, York, and Victoria counties (*See* author, 9, Plate XII, figure 12). Both perforated and imperforate disks have been found at Iroquoian sites in Ontario county, New York (*See* Parker, 6, Plate 121, figure 1); they are also found at sites of other cultures elsewhere in the United States (*See* Mills, 3, Figure 20, and Smith, 1, Plate XLIII).

There are forty-eight potsherd disks chipped to a circular shape, which are probably unfinished, and two hundred and seventy-one others with the edges rubbed more or less smooth. Most of them are made from plain fragments, a few being from pieces of the neck and shoulder; a few others are derived from fragments with paddle markings (Plate XV, figure 14) and from decorated pieces, principally parts of rims (Plate XV, figure 17). Two of them, one of which is seen in Plate XV, figure 16, have a row of what seem to be finger-nail impressions across the concave side of the disk. Another specimen, derived from a plain sherd, has two crude and more or less parallel incised lines across the concave side, and one bears a faintly marked X (Plate XV, figure 15). None of the disks is perforated as at Iroquoian sites elsewhere in Ontario.¹ Imperforate disks were found at two other sites of the same culture nearby and Dawson records their occurrence at the site of Hochelaga (1:436). They are common at early Huron sites in Victoria county, as many as forty-eight coming from one site in Bexley township; and they also occur at Tionontati and Huron sites in Simcoe and York counties, and at other Iroquoian sites in Ontario and Jefferson counties, New York (Parker, 5:20, and, 6, Plate 121, figures 6-12). Potsherd disks have not been reported from Algonkian sites in Canada, but they are common at sites of other cultures in the United States.²

Eight disks, modelled from pottery clay, if they are not abortive attempts to form beads, such as are described on page 63, may have served the same purpose as the disks made of potsherds. Five of them are more or less flattened on both sides, with rounded peripheries; one is plano-convex; and another is somewhat concavo-convex. The smallest is $\frac{7}{16}$ inch in diameter and the largest $1\frac{3}{16}$ inches.

Judging from their scarcity here and at Iroquoian sites elsewhere in Ontario and in New York, and at sites of other cultures in the United States,³ disks were seldom modelled in clay. Only one has been reported from an Iroquoian site in Victoria county, and another comes from a Seneca site in Ontario county, New York (*See* Parker, 5, Figure 4).

These stone, potsherd, and modelled earthenware disks and the charred, wooden, disk-like object in Plate XVIII, figure 4, were possibly used as

¹There are fifteen perforated specimens from Victoria county in the Royal Ontario Museum of Archæology, Toronto. They have also been found at Neutral sites in Oxford (Wintemberg, 8, Plate XXIII, figs. 3, 4) and Elgin counties (*idem*, 9, Plate XII, fig. 14).

²*See* Mills, 3: 49 (Ohio); Smith, 1: 210 (Kentucky); Harrington, 2: 246 (Arkansas), and, 3: 195 (Tennessee); Moore, 1: 34, 38, 101 (Georgia), 2: 149-150, 164 (South Carolina), 3: 294, 298 (Alabama), and, 4, 504 (Florida); Culin, 2, fig. 188; and Jeancon, p. 62.

³All those of which the writer has any record come from Arkansas (*See* Moore, 7: 84, and, 8: 279, 284, and 327).

dice in a game like the modern Iroquois deer button and peachstone games (See Culin, 1:721-729, and 2:105-119). The concave and convex surfaces of most of the disks derived from potsherds would serve to distinguish one side from the other in counting the throws; those with one side retaining the decoration of the sherd possibly counting more than those with plain sides. Possibly the value of the sides of the disk seen in Plate XV, figure 16, was higher still, because both are marked. The concave side of the disk with the faintly marked X possibly also counted more than those not so marked.

Although we have no information respecting such a game among the Iroquois, it is possible that the disks were used in a game like chess; potsherd disks are still so used by the Zuni Indians of New Mexico.¹

Cup and Pin Game

Nine objects made from penultimate or middle phalanges, and thirty-eight others derived from proximal phalanges of the deer, of both right and left sides of the foot, may have been used in games (See Plate XV, figures 19-23). The removal of the epiphysis of the proximal end of eleven specimens derived from phalanges of young deer gave a scalloped edge to this end of the bone (Plate XV, figure 20). One of the specimens made from a middle phalanx, in addition to the holes through the ends, has a large hole broken through one side. One specimen has a large hole at the proximal end only and is probably unfinished, and another, which also appears unfinished, has a hole through the distal facet only. Thirty-four specimens have a hole through the joint at each end, that through the proximal articular facet being much larger than the one through the distal end—in fact, in most of the specimens, the opening is of the same diameter as the marrow cavity. The holes through the distal articular facet are either round or irregularly oblong and countersunk. Two specimens, in addition to the holes through the articular ends, have two lateral holes through the walls of the larger end of the phalanx.² Three others have four lateral holes³ (figures 22 and 23), two of the holes in the one in figure 22 piercing the back wall of the bone. Another specimen has an unfinished hole on three sides, and a broken specimen retains part of two holes and probably had three or four perforations before it became broken. The lateral holes in these objects are countersunk; none of them is perfectly round. The sides of the specimen in figure 23 are flattened and it is almost square in cross-section. Three other specimens differ from those described in having the proximal joint removed and a countersunk hole through the distal articular facet. The severed edge of the one in figure 19 has been ground smooth.

Parts of the surface of most of the specimens are glossy, possibly from long handling. The edges of the holes at both ends of most of these objects are slightly worn and polished; the edges of the lateral holes of two specimens are considerably worn.

¹Culin, 1: 878. The game, however, does not seem to be of native origin, for Culin (2: 31) says: "Games of pure skill and calculation, such as chess, are entirely absent."

²An Assiniboine Indian cup and pin game, with the sides of the cups or units similarly perforated, is illustrated by Lowie (fig. 3).

³A specimen from a village site on lot 18, Gull River range, Bexley tp., Victoria co., Ont., has eight lateral holes (See Boyle, 11, fig. 31). Another, from a site in Somerville tp., in the same county, has a single lateral hole.

Three specimens bear incised markings, the most simple consisting of transverse lines on one side of the bone. Another has three irregularly spaced, short, transverse cuts on the front. One (Cat. No. VIII-F-12000) has four groups of transverse incisions on three sides of the bone. The most elaborately marked specimen has a row of irregularly spaced incisions on the front and a crudely incised triangular figure on one side (Plate XV, figure 21), and a row of notches is seen on one of the angles of the back. A black substance seems to have been rubbed into the incisions on this specimen, possibly to make them show up more distinctly.

Similar objects, especially those like the one in Plate XV, figure 19, are common at other Iroquoian sites in Ontario and New York, being found at Tionontati sites in Grey and Simcoe counties, at early Huron sites in Simcoe, York, and Victoria counties, at Neutral sites in southwestern Ontario (See author, 8, Plate XXIII, figures 5-7, and 9, Plate XV, figure 13), and at Cayuga, Erie, and Onondaga sites in New York (See Skinner, 4, Figures 2 and 36, and Parker, 1:543, and 6:338). None has been found at an Algonkian site in Ontario, but they occur at sites of that culture in New York (Parker, 6, Plate 108). A few are found at sites of other cultures in Ohio (Mills, 2:58) and Kentucky (Smith, 1, Plate XLIII, figures 5-7).

It has been suggested elsewhere in this report that these objects were possibly used as pendants, but it is more probable that they were used as units in the widely distributed ring, or cup, and pin game, although we have no historical evidence that the Iroquois ever played this particular game; Parker (6:293) probably is wrong in stating that the game was common among the early Huron. These objects certainly resemble some of the units made from the same kind of bones, used in Arapaho, Cheyenne, Grosventre, Assinboine, and Dakota Indian games (See Culin, 2, figures 695, 697, 706, and 737-739). They differ from most of those used in modern games in not being cone-shaped and not fitting into one another;¹ the larger opening, however, is sufficiently large to permit the cups to be easily caught on the pin.

If these objects were parts of cup and pin games, it is possible that the units of each game were either all of one kind, their numerical value depending on their position on the string, or that each game was composed of more than one kind of unit. Some may have been like the Brûlé and Oglala Dakota Indian games, described and figured by Culin (2, Figures 738, 739), in which the upper unit consists of a cup derived from a middle phalanx, whereas the rest of the units are made from proximal phalanges.² The number of cups on a string may not have been constant, perhaps varying from three to nine, as in the modern games (Culin, 2:528). A special value may have been assigned to the marked unit in Plate XV, figure 21. Possibly, also, if the player succeeded in catching one of the units, like those seen in figures 22 and 23, through one of the lateral holes, it counted a special point, as in the Chippewa game (See Boyle, 4: 56, and Culin, 2:534). The value of the count may even have depended on the position of the hole on the front, back, or sides of the bone.

¹See Culin, 2, figs. 699-704, 707-709, 715, 716, 738-740; and Boyle, 4, fig. 134. Parker describes and illustrates such cone-shaped units derived from deer phalanges, from Iroquoian sites in New York (6: 197, and Plate 66, figs. 2 and 5).

²A Cree game in the National Museum (Cat. No. V-A-13) has the upper unit made from the middle phalanx of a wapiti.

Some of the more slender bone awls, found here, may have been used as the pins in this game, although the pins may also have been made of wood.

The manufacture of these units from the unworked bones, of which many were found, is illustrated by a number of unfinished specimens. A perforation at each end was all that was needed to produce those shown in Plate XV, figures 20, 21, and 22; but to make the kind seen in figure 19 it was necessary to break off the proximal end of the phalanx, smooth the fractured edges, and make a hole through the distal articular facet.

Flattened Phalanges

Two hundred and eighty-six flattened objects derived from proximal phalanges and nine from middle phalanges of the deer were found, about one-third of them being either slightly broken or mere fragments. Eleven specimens are from bones of young deer, most of them having the epiphysis missing. Three specimens have been partly scorched, giving them a grey, brownish, and black colour. Some of them are highly polished. The precise use of these objects is not known, but we consider them here because the appearance of some of them suggests that they were used in a game like dice. Several different kinds are illustrated in Plate XV, figures 24 to 29.

The shape of most of the bones has been more or less modified by grinding, but the amount of modification to which each specimen was subjected varied. All of them have the back flattened and the grinding left a large, irregular hole through the wall near the proximal end of the bone (Plate XV, figure 26); in about one-third of the specimens there is also a small hole near the distal end of the bone (Plate XV, figure 29), although some of these may have been made purposely by scraping or gouging after the wall at this end of the bone had become sufficiently thin to permit of this being done. Twenty-seven other specimens were ground until the full length of the marrow hollow was exposed. Sixty-five specimens show no flattening on the front; but a large hole was broken through the wall near the proximal end of the bone, and the edges of the opening have been slightly smoothed. Another specimen has the full length of the front wall broken and each of the slightly smoothed edges bears a shallow notch. The front part of one hundred and ninety other phalanges was ground to several different shapes; one hundred and twenty-two having the whole front flattened, which in most cases resulted in a large opening near the proximal extremity. The openings in a few others seem to have been made purposely by breaking, and in twenty-five specimens the entire marrow hollow was exposed (Plate XV, figure 29). Fourteen specimens with the front at the distal end flattened have the proximal half of the bone ground down at a slant (Plate XV, figure 27), and eighteen specimens have the distal end ground down abruptly, in some cases to a chisel-like edge. Eleven others, two of which are in Mr. White's collection, have the front ground down at an angle at each end, exposing the marrow cavity at both ends, and producing an object with a somewhat triangular, longitudinal cross-section. Another kind, of which we found eighteen specimens, has the front and two sides near the distal end flattened, making this end

of the bone trapezoidal in cross-section; seven specimens are half round in cross-section (Plate XV, figure 28); thirteen, with the sides a little more flattened, have a mixtilinear-triangular cross-section; and five others, with the two sides and the back flattened, are triangular in section. One of the specimens with flattened back has the whole front, including the distal joint, broken off at a slant and the broken edges slightly smoothed.

Aside from the modification seen on the back and front, none of these objects shows any attempt to alter the shape of the distal articular end; two specimens, however, have the larger projection of the proximal joint partly ground off.

Besides the small holes near the distal end on the back of the bone, eleven specimens have a hole through the front of the same end of the bone, and in a few instances the hole seems to have been purposely made; one specimen has a hole commenced on the front, and another has the beginning of the hole on both front and back.

One specimen, in addition to the large frontal opening, has two deep grooves across this side, both of which expose the marrow cavity of the bone. Another specimen (Plate XV, figure 27) has two large holes on the front, the one at the proximal end resulting from this end being worked down at a slant, the other, which is nearly round, produced by deeply grooving the front. Still another specimen has the hole produced by a deep, but somewhat shallower, groove across the front. The specimen in figure 25 has from two to three transverse grooves on the front, giving it a scalloped appearance.

Aside from the various shapes into which these objects have been transformed by grinding, the more special features seen on the front of them consist of pits, notches, grooves, and incised and burnt markings, all of which possibly served as distinguishing marks.

Twenty-one specimens, mostly with flattened fronts, have shallow, irregularly round pits on the front near the distal extremity of the bone; two specimens bear shallow notches on the edge of the large frontal opening; thirteen have shallow, narrow grooves across the front, which in some cases occur only on the edges of the large frontal opening; and twenty-five others bear incised lines, some of them merely confused, perhaps adventitious, scratches. The latter consist either of groups of two or more rows of short, transverse incisions, or of incised lines that extend across the flattened surface of the bone, those near the proximal end being on the flattened edges of the frontal opening. The marks, in two instances deeply incised, are from one to six in number. One specimen has incisions along one edge of the frontal opening only; another has three marks on one edge and four on the other; and a few others have the markings on one of the sides only (Plate XV, figure 24); there are diagonal lines on another specimen. Two specimens, apparently from opposite sides of the foot, have the markings so nearly alike as to suggest that they are made from a pair of bones. The fronts of thirty-one specimens, including two in Mr. White's collection, bear burnt markings consisting of irregularly round spots (Plate XV, figure 28), squarish markings along the edge of the flattened frontal surface, or from one to six transverse bars. Four specimens have the first kind of marking; five the second; and nineteen the third kind, the latter

including eight specimens with one bar, six with two, one with three, three with four, and one with six, bars. The bars are on one side on one specimen and on both sloping sides of another.

Some specimens have more than one kind of marking—thus, three have both pits and burnt markings, one has notches and markings, three have pits and incised markings, and three others have incised transverse lines and burnt markings.

It is difficult to say for what purpose these objects were used, because no similar specimens are in use among modern Indians anywhere. It has been suggested that some, especially those bearing markings, were used like dice in a game. Collectors in the vicinity of the site call them shuttles, especially the kind with the front ground down at a slant at both ends. Other suggestions are given elsewhere in this report (pages 75, 76). The flattened backs and the slight wearing seen on the edges of a few of the small holes at the distal end of some of the objects, the deeply concaved edges of some of the frontal openings, and the signs of wearing in the deep grooves across the front of others, suggest that some of them were lashed to something else.

Objects of the same kind are found at other nearby sites of the same culture as Roebuck, in the St. Lawrence valley as far west as Prince Edward county, at the site of Hochelaga,¹ and in Jefferson county, New York (*See* Skinner, 4, Figure 36, and Parker, 6:338). They also occur at Tionontati sites in Simcoe county and at early Huron sites in Simcoe, York, and Victoria counties, but they seem rare at Neutral sites (*See* Boyle, 10, Figure 10, and 13, Figure 43). Similar objects, although not flattened to such an extent as those from this site, were found at an Erie site in Chautauqua county (*See* Parker, 1, Plate 34, figures 5, 6, 16, and 17), and others at a Seneca site in Alleghany county, New York. They seem to be exclusively of Iroquoian origin.

The manufacture of these objects can be illustrated by bones in various stages of manufacture, the ultimate form depending on the amount of grinding on the front and back of the bone. The fronts of several specimens were slightly scorched, probably to facilitate grinding. The appearance of others suggests that a hole was purposely made through the front, the broken edge being in some cases afterwards scorched. The pits on the front near the distal end of the bone seem to have been made by scooping or scraping, and the notches and incised lines may have been made with the sharp edge of a chert chip. The round spots and the bars and other markings, seen on the front of other specimens, were probably produced by applying a small, live coal to the surface of the bone.

OBJECTS OF SUPERSTITION AND RELIGION

Some of the objects found at Roebuck may have been charms or amulets; others may have been used for magical purposes and in religious ceremonies.

¹Dawson (2: 369) speaks of "numerous objects formed of bones of the feet of quadrupeds, ground flat on one side and hollowed in a peculiar manner, with a small hole bored in one end," found at the site of Hochelaga.

The occurrence of whole, or nearly whole, skulls and lower jaws of several different kinds of mammals, and the beaks of several species of birds, suggests the use of medicine bundles similar to the "mysterious packages" of the modern Iroquois.

Perhaps some of the larger bone heads, mentioned on page 64, were used by medicine-men in some of their ceremonies.

It is possible that the earthenware pipes, especially those bearing human and animal forms, which in some cases may have represented manitous and religious symbols, and some of the earthenware pots with modelled human faces on the rims, were used in religious ceremonies.¹ Although snake forms occurred on earthenware pipes, they probably cannot be taken as evidence of the existence of a serpent cult.

The carved prong of an antler shown in Plate XVII, figure 24, and more fully described under "Art," may have been a phallic symbol.

The small earthenware human figurine in Plate XV, figure 30, may have been used in the practice of witchcraft, as are similar small bone human forms among the Seneca of New York (See Skinner, 2:114, and Harrington, 4: 228). The head in figure 31, in the same plate, may be part of a similar figurine.

CHARMS AND AMULETS

Only one natural stone object of a grotesque shape that might have been an amulet was found (Cat. No. VIII-F-12409).² It is possible that the clay concretion with an incised X on one side, seen in Plate XV, figure 18, was a charm. The quartz crystals are more likely to have been charms than the specimens just described, and may have been hunting and divining fetishes like those of the Cherokee,³ medicine-men's charms as among the Eskimo, or may have been applied to a person believed to be bewitched to draw forth "leaves, pebbles, etc.," as among the modern Tuscarora (See Smith, E., pages 68-69). Another object, which may have been an amulet, is a polished periotic bone of a deer. The notched or perforated teeth of the bear, raccoon, and wapiti (Plate XV, figures 2 to 4) may also have been used as charms.

Gorgetts Made of Human Skull

The gorgets made from pieces of human skull, of which there are eight fragmentary and two whole specimens, may have been amuletic. Most of them seem to be derived from the parietals (See Plate XV, figure 32), but two, one of which is seen in figure 33, are made from the vertex and include part of the frontal and parietals, the one figured being evidently derived from the skull of a young individual, as synotosis of the sutures has not commenced. The edges of these objects are either rounded or ground off at a slant. One has the arterial grooves of the inside surface partly obliterated by grinding, and three others have the convex surface

¹The æsthetic purpose was secondary to the magical or religious in many cases. Respecting the occurrence of human and other forms on pottery, Holmes (2: 163), says: "It is not unlikely that superstition gave rise to the use of these life-forms and restricted them to the places on the vases and pipes to which they are so scrupulously confined."

²According to the Jesuit Relations (vol. XXXIII, p. 211) the Hurons considered certain stones of a peculiar shape as lucky.

³See Hodge, Handbook Am. Indians, s.v. "fetish."

polished. The concavo-convex shape is, of course, inherent in the material from which the objects are derived. The two most complete specimens have seven holes, three of those in the one in figure 32 being unfinished; the method of producing the holes has been described under "Perforating." It is impossible to say how many holes pierced the specimens represented by fragments; but they all possibly had seven holes, as in three other specimens from Ontario (See Boyle, 1, Figure 107; and, 12, Figures 11 and 12). The holes of six specimens are distinctly worn. Only one specimen bears any markings that might be considered ornamental. They consist of a group of five, short, oblique lines near the middle of the convex side of one of the broken specimens, and are too closely parallel and equidistant from one another to be accidental scratches. Bone gorgets from elsewhere in Ontario rarely bear any embellishment (See Boyle, 12, Figures 11 and 12).

We have no historical information respecting the exact use of these objects. Their shape and the perforations suggest that they were worn as breastplates or gorgets suspended from the neck by a cord attached to two holes nearest the edge, the other holes being probably intended for the attachment of subsidiary ornaments. It has been suggested that these objects were valued war trophies (Skinner, 4: 138), but, if this were so, they would all be derived from the skulls of adults, whereas almost half of the gorgets found here are derived from those of children. If derived from the skulls of war captives exclusively, it would be contrary to the Iroquois practice of sparing the lives of children.¹ If made from the skulls of their own children, there is probably a deeper reason; it is possible that they are derived from skulls of epileptics and are analogous to the amuletic *rondelles* found by Prunières in neolithic deposits in France, half a century ago (See Prunières, 1 and 2; also Fletcher, page 13).

Similar objects, made from the same material, have been found at sites of the same culture in the immediate St. Lawrence valley, at the site of Hochelaga,² and in Jefferson county, New York;³ at Neutral sites in southwestern Ontario; at early Huron sites in York county; at a post-European site in Wentworth county (See Boyle, 1, Figure 107); and at a Seneca site in Ontario county, New York (See Beauchamp, 4, Figure 201).

They seem to be rare at non-Iroquoian sites in the United States.⁴

Stone Gorgets

Three slate specimens may be parts of gorgets, worn as amulets, although, as mentioned on page 65, their purpose may also have been ornamental. One, made of greenish grey schistose slate, shaped like an

¹Megalopenis (p. 156), speaking of the Mohawks, says: "They spare all the children from ten to twelve years old."

²Dawson (3:145) describing two specimens found at the site, says: "They are human parietal bones, trimmed around the edges so as to form flat bowls, and one of them has a hole at the edge, probably for a string to suspend it." These specimens are both fragmentary; one of them is in the Murphy and the other in the Gravel collection, Museum of the Canadian Antiquarian and Numismatic Society, Montreal.

³See Beauchamp, 4, figs. 141 and 333; Skinner, 4, Plate XXIII, figs. *a* and *i*; and Parker, 6: 338.

⁴One with two holes near the edge was found in the Westenbaver mound, Ohio (Mills, 4, fig. 15). A disk cut from a human skull, found at Longs Hill, near Florence, Nebraska, in the U.S. National Museum (Cat. No. 143,462) is only 1 inch in diameter, is not perforated, and so probably not to be considered as of the same type (See Whitebread, p. 11). Another skull disk, which bears an engraved bird design, was found in the Turner group of earthworks in Ohio, and although it is of the same size as some of those found here, it does not seem to have been perforated (See Willoughby, 3, figs. 23 and 24.)

oblong hexagon and about 4 inches long and $1\frac{5}{8}$ inches wide when whole, is probably part of a specimen with two holes (Cat. No. VIII-F-13066). The broken edge at the largest end has been ground smooth. It is about $\frac{1}{4}$ inch thick. One of the specimens is a rectangular, imperforate piece of grey slate, $2\frac{1}{8}$ inches wide, $3\frac{3}{4}$ inches long, and $\frac{3}{16}$ inch thick, smoothed on all sides, and may be in process of manufacture into a gorget (Cat. No. VIII-F-12841). A piece of rough, slightly worked, reddish slate, with a broken-out perforation, probably also was in process of manufacture into one of these objects when it became broken.

Slate gorgets occur at Neutral sites in southwestern Ontario (See the author, 6:37), but none has been reported from Iroquois sites in New York (Skinner, 4:19, 171, and Parker, 6:401).

MASKS

The appearance of some of the human and animal faces modelled on the bowls of earthenware pipes suggests that they were intended to represent wooden masks, like some of those used by the modern Iroquois in their ceremonies.

The Hurons seem to have used masks,¹ but according to Beauchamp, there does not appear to be any evidence of their use by the early Iroquois of what is now New York state.²

RATTLES

A fragment of the bridge portion of a plastron of the painted turtle (Cat. No. VIII-F-12351) with the remains of a perforation on one of the broken edges, may be part of a hand rattle like some of those used by Iroquois in religious ceremonials.³

No complete shells of the painted turtle have been found at an Iroquoian site, but a few rattles made from whole shells of the southern box turtle have been discovered in post-European graves in southwestern Ontario (See Boyle, 1, Figure 108), which were probably left behind by the Iroquois conquerors of the Neutrals.

WHISTLES

The shape of a few bone objects suggests that they were used as whistles. It is possible, for instance, to produce a faint sound by blowing into the hole broken or cut into the front of a few middle phalanges of the deer. Boyle, referring to flattened objects derived from deer phalanges, like those described under "Games," says: "They are popularly known as whistles, and I have heard of persons who are able to produce a loud and

¹Le Jeune (Jesuit Relations, 1637, XIII, p. 175), says: "They donned their masks and danced to drive away the disease." Again, on pp. 263 and 265, he states: "All the dancers were disguised as hunchbacks with wooden masks."

²"To the fact that the early missionaries found no public use of masks here, and for a long time knew of none in New York made of wood, we may add that Bruyas records no Mohawk word meaning a mask, or referring to its use. We may therefore conclude that it came into New York late in the 17th century, and that the Seneca used it first of all" (Beauchamp 6:185).

³Turtle shell rattles seem to have been used by the Hurons, for Le Jeune, in the Relation of 1639 (XVII, p. 157), says: "This Tortoise is not a real Tortoise, but only the shell and skin so arranged as to make a sort of drum; having thrown certain pebbles into this, they make from it an instrument like that which children in France use to play with."

shrill sound from them." He thinks that those shaped like the one in Plate XV, figure 27, "certainly *look* more like whistles, but I have never been able to produce any sound from them" (1:52).

Owing to their use among the modern Iroquois it may be inferred that wooden whistles or flutes were used by the pre-European Iroquois and the inhabitants of this site. It might be mentioned, in this connexion, that Parker (6:429) suggests that some of the flattened phalanges "look very much like the sliding orifice regulator used on Iroquois flutes, and these also frequently show marks of the thongs that passed over them." Some of our specimens, as stated on page 72, show similar signs of wearing in the frontal grooves and on the edges of the large frontal openings.

CANNIBALISM

It is probable that, as stated below, the inhabitants of this site, in common with other Iroquois of the historic period,¹ practised ceremonial cannibalism.

SMOKING

That smoking was extensively practised by the people of this site is indicated by the numerous pipes. Leaves of the tobacco plant probably were smoked here as among the Iroquois of the lower St. Lawrence valley, although it may have been mixed with leaves of the sumac, which, as Morgan says, "has been used by the Indians to temper tobacco from time immemorial" (II, page 34). Cartier's description of tobacco and its use is as follows: "Furthermore they have a plant, of which a large supply is collected in summer for the winter's consumption. They hold it in high esteem, though the men alone make use of it in the following manner. After drying it in the sun, they carry it about their necks in a small skin pouch in lieu of a bag, together with a hollow bit of stone or wood.² Then at frequent intervals they crumble this plant into powder, which they place in one of the openings of the hollow instrument, and laying a live coal on top, suck at the other end to such an extent that they fill their bodies so full of smoke, that it streams out of their mouths and nostrils as from a chimney. They say it keeps them warm and in good health, and never go about without these things" (pages 183-184).

The pipes were made of stone, earthenware, and bone.

STONE PIPES

Only fragments of three stone pipes were found, and a whole one, which probably belonged to the people of the site, was plowed up on the Fraser farm about a mile east. The broken and perhaps unfinished slate

¹Hennepin (II, p. 510), says: "The *Iroquois* are the only *Savages* of *North America* that eat humane Flesh; and yet they don't do it but in cases extraordinary, when they are resolved to exterminate a whole Nation. They don't eat humane Flesh to satisfy their appetites; 'tis to signify to the Iroquoise Nation, that they ought to fight without ever submitting to their Enemies; that they ought rather to eat them than leave any of them alive; They eat it to animate their Warriours; for they always march out of their five Cantons the day after, to fight with their Enemies; for the Rendezvous for next day is always given notice of by their Feasts of humane Flesh." See also Jesuit Relations, under "Cannibalism," in Index vol.

²It is possible that Cartier mistook the reddish coloured earthenware, of which the Iroquoian pipes are mostly made, for wood.

pipe seen in Plate XV, figure 47, was found on the surface of the site by Mr. White and was presented by him to the National Museum. It is made of veined, greenish grey slate, is of the type with detachable stem, and probably represented when whole a bird (*See under "Art"*). The sides are flat and taper slightly toward the base, whereas the base itself is more or less wedge-shaped. The drilled stem hole is conoidal and meets the conoidal bowl cavity at a right angle; the bowl cavity and stem hole are of the same diameter. There is a biconical hole through the base, drilled from the front and back, which was intended either for fastening the string that secured it to the wooden stem to prevent loss, or for the attachment of ornaments. Another biconical hole, now broken out, was drilled diagonally through one corner of the side seen in the illustration. Two stems of what were probably monolithic pipes of soapstone were found by us. Both taper toward the mouthpiece and are highly polished. The hole in these stems is larger at the mouth than farther in. The pipe from the Fraser farm, which also is made of soapstone, is monolithic, with the bowl and stem nearly at right angles to each other, and is of the same type as one found in Oswego county, New York (*See McGuire, Figure 117*), except that it lacks the incised human figure on the back of the bowl.

As compared with those of earthenware, pipes of stone are scarce at most pre-European Iroquoian sites.

EARTHENWARE PIPES

Six entire and seven hundred and fifty-two fragments of earthenware pipes were found, making a total of seven hundred and fifty-eight specimens. Three hundred and thirty-seven fragments are of bowls and four hundred and fifteen of stems. These seven hundred and fifty-two fragments appear to be parts of seven hundred and twenty-seven pipes, as fifteen of the fragments of bowls fit other fragments, three fragments of stems fit other stems, and two fragments of stems fit broken bowls. Probably other stem fragments belong to other stems and bowls, but the intermediate parts were either too small to be found or were crushed. Besides those found by the writer there are fourteen specimens, comprising a whole pipe, nine fragments of bowls, and four stems in Mr. White's collection; a fragment of a bowl and a stem found and presented to the National Museum by R. H. King in 1892 (Cat. Nos. VIII-F-15312 and VIII-F-15313); a whole pipe catalogued as "from Roebuck," in the Royal Ontario Museum of Archæology (*See Plate XVI, figure 22*); and a small decorated fragment of another in the collection of the late A. J. Clark, Richmond Hill, Ontario, now in the National Museum.

The whole pipes were probably lost, all others being kept or taken away by the inhabitants when they left the site, only the broken ones being discarded. Even some of the bowls that were intact may have had a hole bored in one side for the reception of a wooden stem and were carried away when the place was abandoned.

The pipes and fragments were found on the surface, in the muck surrounding the spring, and in all the refuse deposits excavated. In general they were most numerous in the deepest and richest deposits, the largest

number of them usually being in the deposits that yielded the largest numbers of specialized types of pipes.

All but a few of the pipes are of the elbow type or variations of it, the bowls being mostly at an obtuse angle to the stem.

The material of the pipes consists of clay which contains either less, or more finely crushed, tempering material than that in pottery. The colour varies from grey to a terra-cotta red; none is of the black-surfaced ware so common at post-European Tionontati, Huron, and Iroquois sites. The surface of most of the pipes is highly polished, in fact some of them look almost as if glazed; and no better finished ware occurs anywhere east of the Mississippi.

No square-mouthed pipes were found of the same type as those found so commonly in post-European Tionontati (Boyle, 1, Figure 11), Huron, and Iroquois sites in Ontario. There are also no double-bowled pipes like one from a site in Harvey township, Peterborough county, described and figured by Boyle (7:58), Figure 28).

All of the earthenware pipes are of the stemmed type, none being found that consisted merely of a bowl with a hole for the reception of a wooden stem. Four hundred and twelve of the stems are round in cross-section; two, one of which is seen in Plate XVI, figure 24, are oval; one is square (Cat. No. VIII-F-11888); three are rectangular (Plate XVI, figures 26 and 27); one is mixtilinear-triangular; and another seems to have been somewhat almond-shaped (Cat. No. VIII-F-13149). Only one of the stems (found by Mr. White) is fluted along the top as on those on pipes of the square-mouthed and blowing-face types from post-European Tionontati and Huron sites. Stems round in cross-section occur on most Iroquoian pipes and a few are oval; pipes with square stems have been found at other Iroquoian sites in Ontario and Quebec.

The round stems taper gradually from where they join the bowl to the mouthpiece. The shortest stem, which is $1\frac{1}{2}$ inches long, is seen on a badly broken pipe (Cat. No. VIII-F-11092). The longest broken stem is $4\frac{7}{8}$ inches long and seems to have been much longer. No stems are very slender, the one on the pipe seen in Plate XVI, figure 18, being of about the average thickness. None of the mouthpieces is very small, the smallest being about $\frac{3}{16}$ inch in diameter. The mouthpieces of one hundred and thirty-nine stems were modelled into shape, whereas those of eighty-two others were ground into various shapes after they became broken. The mouthpieces of five stems are flaring, and those on five others, including three on stems that are square in cross-section, are slightly nipple-shaped (Plate XVI, figures 5, 24, 26, and 27). Five of the stems with ground ends have nipple-shaped mouthpieces and the tips of seventy-seven others are cone-shaped, twenty-two of them being more or less symmetrically ground (See the one on the pipe in Plate XV, figure 41). A tooth-hold or groove part of the way around the mouthpiece can be seen on two stems, one of them apparently having been ground to a cone shape before the tooth-hold was made.

Two hundred and five bowls, including nine in Mr. White's collection, and sixteen stems, including four of Mr. White's, are decorated; six of them apparently having both bowl and stem ornamented. Probably many more of the pipes used by the people of this site were decorated. The various

decorative designs are more fully described under "Art." A few of the stems are elaborately decorated (*See* Plate XVI, figures 24, 26, and 27) and in this respect are like one found in Victoria county, and another in Peterborough county, Ontario (*See* Boyle, 7, Figures 31 and 32).

Four stems were painted red, but none of the bowls is coloured, and judging from the scarcity of coloration at Iroquoian sites elsewhere,¹ earthenware pipes were seldom decorated with paint.

There are five main types of earthenware pipe bowls, all of them being susceptible of division into sub-types, making about seventeen kinds. Several of these sub-types grade into other sub-types even of other main types. The four main types are: I, nearly tubular; II, cylindrical; III, trumpet; IV, ovoid; and V, conoid. Besides those that are assignable to these types there are fifty-nine fragments of bowls too small to identify as to type.

Two of the pipes can be considered as nearly tubular, one being the fish pipe seen in Plate XVI, figure 5, and the other the pipe resembling a corn-cob in figure 22, in the same plate, both having the bowl cavity and the stem hole nearly on the same plane. Pipes of this type are rare at Iroquois sites generally, the only specimens nearly like these coming from an Onondaga site in Jefferson county (Skinner, 4, Plate XXXVII, figure *a*) and from presumed Cayuga sites in Cayuga county, New York (Beauchamp, 2, Figures 156, 179, and 207).

The cylindrical type of earthenware pipe bowl, of which there are twenty-eight broken specimens, grades into the ovoid when its top contracts and its body becomes bulbous, and into the conoid when its bowl approaches a cone form. This type may be divided into four sub-types: (1) simple, (2) simple with collar, (3) simple with shield bearing a human face form, and (4) slightly flaring.

There are eighteen bowls of the simple, cylindrical sub-type, one of which is in Mr. White's collection (*See* Plate XV, figures 34, 35, and 38). One, which is undecorated, lacks part of the upper edge of the bowl; the stem has been broken off and the broken end ground to a roughly conoid shape (Cat. No. VIII-F-11090). Part of the upper portion of the pipe bowl in Plate XV, figure 34, which is unusually low, is lacking, and the tip of the broken stem has been rubbed smooth. The pipe in figure 35, in the same plate, also lacks the upper part of the bowl and the tip of the stem. The one in Plate XVI, figure 6, shows a luting scar on the front, which suggests that a human face or some other life form had been broken off. A fragment of a massive bowl (Cat. No. VIII-F-11887) is at least $\frac{7}{10}$ inch thick and is unusual in having several large mammillary elevations around the top of the bowl. This sub-type grades almost imperceptibly into the fourth sub-type with slight flare.

Five pipes have bowls of the simple cylindrical with collar sub-type; two of them have overhanging collars (Cat. Nos. VIII-F-10264 and VIII-F-13293) and two others (Cat. Nos. VIII-F-10264 and VIII-F-13139) projecting angular tops, resembling the tops of some of the earthenware pots found here:

¹A broken bowl bearing a human face, from Price Corners, Medonte tp., Simcoe co., Ont., is stained or painted a bright red (*See* Boyle, 14: 57).

One pipe bowl of the third sub-type, shown in Plate XVI, figure 19, bears a shield-like, flat surface on the front, on which is a crude representation of a human face, more fully described on page 108.

The top of the fourth sub-type of pipes with cylindrical bowls, of which there are five broken specimens, flares slightly and grades into the trumpet type (Cat. Nos. VIII-F-11085 and VIII-F-13730d).

The trumpet type of pipe, as its name implies, has a bell or trumpet-shaped bowl. There are one hundred and thirty-two fragmentary bowls of this type, two of them being in Mr. White's collection. This type of pipe may be divided into three varieties—the simple trumpet, the collared trumpet, and the special trumpet.

The simple trumpet type is the most common of all the types found here, about one-third or one hundred and twenty-two fragmentary bowls, out of three hundred and twenty-seven, being of this type.¹ Only one was nearly whole and it had portions of the stem and bowl broken off, which were afterwards ground smooth (Cat. No. VIII-F-11878). The smallest bowl measures $1\frac{3}{8}$ inches across the flaring mouth, and the largest $2\frac{3}{4}$ inches. Most of the lips are finished off round; one has the edge squared. The axis of the bowl of most of them is about 45 degrees from that of the stem. One specimen (Plate XVI, figure 8) has an angular heel.

Sixty-eight of these bowls are decorated. Sixty-two have groups of horizontal or oblique grooves on the front (Plate XV, figure 45) and one has a group of similar grooves on the side of the bowl; they are more fully described on pages 102 and 103. Two have decoration within the lip; two have other kinds of decoration (Cat. Nos. VIII-F-10178 and VIII-F-13123a); and two bear life forms (Plate XVI, figure 8, and Cat. No. VIII-F-13137), the one not illustrated having in addition a group of horizontal grooves and other decoration (*See* page 111). Pipes of the same type bearing groups of grooves like those on the bowls in Plate XV, figure 45, have been found at other sites of the same culture as Roebuck in Prince Edward, Lanark, and Glengarry counties, Ontario; near St. Regis, Huntingdon county, at the site of Hochelaga, and near Lanoraie, Berthier county, Quebec; in New York (*See* Beauchamp, 2, Figures 153, 189); and in Vermont (*See* Perkins, 1, Plate I, figure 3, and 2, Figure 13). They are also seen on a few pipes from Huron sites in Simcoe, York, and Durham counties, from a Tionontati site in Simcoe county, and a Neutral site in southwestern Ontario.

The lips of the simple type of trumpet pipe curve more gracefully and are thinner than those found at late Tionontati and Huron sites in Simcoe county. None found here has the narrow bowl with encircling collar around the middle like those from Simcoe county (Orr, 5:123).

Pipes of the simple trumpet type have been found at sites of the same culture as this site in the immediate St. Lawrence valley, in Prince Edward, Lanark, and Glengarry counties, Ontario; in Wright, Huntingdon, and Berthier counties, and at the site of Hochelaga, Quebec; in Jefferson and Onondaga counties, New York; and in Vermont. They also occur at Huron sites in Simcoe, York, Durham, and Victoria counties; at Tionontati sites in Simcoe county; at Neutral sites in southwestern Ontario; and at an Erie site in Chautauqua county, New York.

¹Parker (6: 148) says: "The most common type of pipe among the Mohawk-Onondaga group is that having a flaring trumpet mouth."

There is only one pipe of the collared trumpet type (Plate XV, figure 44).

Eight pipes are of the special trumpet type, all of them having flaring mouths like those of the simple type, but the lower part of the bowl is either bulbous or shouldered. Some of the bowls of this type are also more profusely decorated than those of the simple type.

One of the simplest special trumpet pipes, decorated with a row of pits around the bulging part of the bowl, is seen in Plate XV, figure 46. Similar pipes have been found at Iroquoian sites in other parts of Ontario, one being from Innisfil township, Simcoe county (*See Orr, 2:16*); one from lot 28, concession V, Vaughan township, York county (*See Orr, 1:60*); one, but with the neck less constricted and decorated with encircling grooves and a group of short horizontal grooves like those on some of the simple trumpet pipes, from near Eglinton, York county; one from Cartwright township, Durham county; one from Yarmouth township, Elgin county (*See Smith, 2, Plate LXVII, figure 7*), and another from Bayham township, in the same county. One specimen (Cat. No. VIII-F-12269) differs from that shown in Plate XV, figure 46, in having a long neck above the bulging part of the bowl and in having this part decorated; small lip fragments of three other pipes bear the same kind of decoration and are probably parts of bowls of the same type. A fragment of what seems to have been a bowl of the same type (Cat. No. VIII-F-13123*b*) was shouldered instead of bulging and was probably of the same shape as one found in the site of Hochelaga (*See Dawson, 2, Figure 6, and, 3, Figure 23*) and another from a Huron site in Victoria county, Ontario.

McGuire's contention (page 493) that pipes of the trumpet type were copies of the flaring mouths of trumpets of early European explorers is scarcely tenable, because the trumpet pipes found here and at early Iroquoian sites elsewhere in Ontario were probably made long before the arrival of Europeans. Moreover, why should the Indians have to wait until the white man's trumpet gave them the suggestion when some of our native flowers, such, for instance, as those of the cherished tobacco plant, would suggest the shape.

The ovoid type of pipe bowl, of which there are seven more or less fragmentary specimens, including one in Mr. White's collection (Plate XV, figures 37 and 43), has a sub-type with a cornice-like top that resembles some of the pottery vessels found here.

None of the pipe bowls is spherical.

The truncated, inverted cone type of pipe may be divided into five sub-types, in some instances depending on the kind of decoration, as follows: (1) simple cone; (2) cone with deep, encircling grooves; (3) cone with deep encircling grooves and pits; (4) cone with straight collars; and (5) cone with incurving collar; the latter susceptible of still further subdivision, depending on the kind of modelled decoration. The angle between the bowl and the stem of all of the small, simple cone pipes is more obtuse than on the larger pipes. There are one hundred and two specimens of this type, including one presented to the museum in 1896, and three others in Mr. White's collection from the site.

Twenty bowl fragments are of the simple cone type. The shape of one of them is reminiscent of a truncated cone type of pipe found on Tionontati

sites in Simcoe county (See Boyle, 3, Figure 5) and early Huron sites in Victoria county (See Boyle, 8, Figure 5), except that it lacks the oblong, vertical depressions on the sides and other decoration.

The second sub-type includes bowls with encircling grooves, which in some cases are of different widths and depths. There are ten specimens of this type, one of which is in Mr. White's collection.

The third sub-type, of which there are nine broken bowls, has deep encircling grooves and a row of pits either above or below the grooves (Plate XV, figure 40).

The cone with straight collar and encircling grooves, of which there are thirty-three specimens, is more common than any other sub-type (See Plate XV, figure 41).

The sub-type with incurving collar, of which there are twenty-eight specimens, shows the most elaborate treatment of any type found here. Four of them bore a crescent on the side of the bowl facing the smoker (Plate XVI, figure 14), fifteen, including one in the White collection, bore human face masks (Plate XVI, figure 18), four had owl face forms (Plate XVI, figure 12), one bore a rattlesnake form (Plate XVI, figure 3), and five others are so broken that it is impossible to say whether they bore any of these life forms or not. A more detailed description of the life forms and the decoration on the incurved collar is given under "Art."

Only a few of the pipe fragments, which are too small to assign to any of the above types, require any special comment. One of them bears the group of horizontal grooves so often seen on the fronts of bowls of the trumpet type, which suggests that this fragment is of this type. Another fragment of what was probably the front of the bowl has a luting scar and a broken space of about the same size below it, which suggests that there had either been a human or animal head, a whole animal form as on some of the stone effigy pipes (See Boyle, 13, Figure 7), or some kind of handle, as on a pipe from a grave in Pennsylvania (See Wren, Plate 15, figure 27), and on another from Tennessee (See McGuire, Figure 150). One fragment from that part of the bowl where bowl and stem join (Cat. No. VIII-F-13149) is possibly from a pipe with an oblong bowl, like one illustrated by Boyle (7, Figure 33); it even has pits on each side as on the pipe in Boyle's figure; the lower part of the stem was notched. It is hard to say of what type of pipe the fragment seen in Plate XVI, figure 15, formed a part. Skinner illustrates a similar shield on a pipe of the truncated cone sub-type, from a site of the same culture as Roebuck, in Jefferson county, New York (4, Figure 39b); and it is probable that our specimen formed part of a similar type of pipe.

Besides the life forms represented on the bowls of the trumpet and cone types, there is one pipe with the bowl modelled to represent the body of a bird (Plate XVI, figure 7), two others with snakes coiled around the bowl (Plate XVI, figures 1 and 2), and what appear to be several fish forms on the bowl of another (Plate XVI, figure 4).

Here, as elsewhere at pre-European Iroquoian sites, all the human faces, bird heads, and crescents faced the smoker.

Earthenware pipes with human faces and other life forms are common at Iroquoian sites, probably more common than at sites of any other

culture. A specimen has been found as far east as Victoria county, New Brunswick (*See* Bailey, Plate II, figure 9), but it was probably carried there by some Iroquois war party or obtained by the people of that part by trade. No pipes with two, three, and four face masks on the one bowl were found here as at early Huron and Neutral sites in Ontario (*See* Boyle, 8, Figures 6, 7, 8; 11, Figure 22) and an Erie site in New York (*See* Parker, 1, Plate 31, figure 4); none of the pipes, also, had one of the eyes or the mouth forming the bowl cavity as on two bowls from Tionontati sites in Simcoe county (*See* Smith, 2, Plate LXIX, figures 7 and 8). Bird heads, especially those of the owl, are a distinctive feature of Iroquoian pipes and are seen on Tionontati, Huron, Neutral, Onondaga, and Mohawk pipes. Snake forms on earthenware pipes also seem to be an almost exclusively Iroquoian feature. Pipes with crescent forms on the back of the bowl seem to be confined to Iroquois of the Mohawk-Onondaga group, and occur as far east as the site of Hochelaga (*See* Dawson, 3, Figures 23 and 23a). A much cruder and simpler form comes from a site on lot 26, concession III, Edwardsburgh township, southeast of Roebuck. In New York they seem to occur exclusively in Onondaga sites in Jefferson county (*See* Beauchamp, 2, Figure 220, and Parker, 3, Plate XX, figure 2).

Several of the bowls bear rectangular, oblong, and ovoid depressions (*See* Plate XV, figure 43, and Plate XVI, figures 11, 13, and 14). Most of them occur on bird and crescent forms and do not seem to be ornamental in themselves, so it is likely that they and the eyes of the human and other life forms were inlaid with material of a different colour from that of the pipe itself.¹ There is nothing, however, to indicate this, beyond the fact that the bottom of some of the depressions seems to have been purposely roughened as if to hold the inlay more effectively. If pieces of shell were used they probably became loosened and fell out. The material may also have consisted of coloured pieces of wood, which have now disappeared through decay. Similar depressions are seen on both stone and earthenware pipes from Iroquoian sites in Ontario, Quebec, New York, and Vermont, and appear to be an exclusively Iroquoian feature.

Earthenware pipes were as abundant here as at Iroquoian sites elsewhere in Ontario and in New York.

The technical processes involved in the manufacture of pipes, of earthenware differed slightly from those employed in the production of pottery. Most of the ware appears to be without tempering, although the material may have been so finely comminuted that its presence cannot be detected.

There is no evidence that any of the pipes were made in a mould, but each pipe was modelled separately so that no two are exactly alike. The appearance of the sides and bottoms of some of the bowl cavities suggests that the clay had been modelled over a rough stick; in others the cavities are perfectly symmetrical, which suggests that they had been carefully reamed out before firing. That pipes may sometimes have been made solid and bored out after modelling is suggested by a broken bowl (Cat. No.

¹Hunter (1: 175) quotes a reference to a pipe with the eyes of the human face "formed of white pearly-looking beads."

VIII-F-10078). All the stem holes seem to have been formed by modelling the clay around a smooth twig or reed, which was destroyed in the burning, leaving a perfectly round, cylindrical hole. That reeds were in some cases used as cores is suggested by the faint longitudinal striæ on the sides of some of the holes. Reeds, also, would be more readily destroyed in the burning process than solid twigs. None of the stem holes was formed by using a core composed of twisted grass or fibres or a cord, as in pipes from sites of the Tionontati, Hurons, and Hochelagans (*See* author, 7).

One fragmentary pipe of unidentifiable type was apparently broken apart before firing, luted together, and the crack plastered over with an additional covering of clay.

All the human face and bird masks on the pipes appear to have been added to the bowl by luting.

Some of the broken bowls, in one case that of a trumpet pipe broken across the middle, had the fractured edges ground smooth. The stems were also reshaped after they became broken.

PIPES MADE OF BONE

The pipes made of bone, of which there are twenty-nine specimens, are made from scapulæ of the deer, eleven being rights and eighteen lefts, in various stages of manufacture, sixteen of them apparently being completed (Plate XV, figure 39). The bowl was formed by deeply hollowing out the glenoid cavity in the head of the scapula and the spine and plates were removed, leaving the thick, external border to form the stem. The broken edges are more or less smoothed by rubbing and the bowl is hollowed to correspond to the shape of the exterior of the head. A perforation passed through the stem of only six of them, but the cancellated condition of this part of the bone permits them to be smoked. No trace remains of any attempt to stop the inflow of air through the broken edges of the bone, as by clay, grease, wax or pitch, or wound sinew. The end of the stem of the specimen illustrated is cut off squarely. The coracoid process may have served as a handle. Two of the completed pipes show no signs of burning.

This type of bone pipe is unique except for a fragment (the bowl) of one found in Brant county, Ontario.

The processes used in the manufacture of these bone pipes and the history of a pipe from the raw material to the finished object are somewhat illustrated by the specimens collected; including ninety-four unworked scapulæ. Twenty-seven of the unfinished specimens have the spine, acromion, and the thinner portion of the plates broken off, three of them having no bowl cavity started, and one lacking the articular end, though the stem is scraped and polished; one of two other specimens with unfinished stems has the glenoid cavity burnt and one seems to have a completed bowl. Seven specimens have a burnt spot in the glenoid cavity but are not excavated, and two others, which are not burnt, have the cavity slightly gouged out.

PROBLEMATICAL AND MISCELLANEOUS OBJECTS

Under this head objects of stone, bone, antler, teeth, shell, earthenware, and wood, the precise uses of some of which are unknown, will be described.

Eleven stone implements like that in Plate XIV, figure 19, were found, two of them being in Mr. White's collection. Four of them are more or less broken. They are mostly made from oblong pieces of schistose slate and hornblende schist; one is made of sandstone. Six specimens have one of the longer edges sharpened by grinding; four others, in addition to the sharpened, long edge, have a chisel-like edge at one end; and the one illustrated has a cutting edge at each end. The long, cutting edge of one specimen is incurved, in which respect it resembles similar objects from the Uren Village site, in southwestern Ontario (See author, 8, Plate XIX, figure 5). The unsharpened ends and the side opposite the long, sharpened edge of five specimens are left in a rough state; none of the specimens has all the sides smoothed. One is about $\frac{13}{16}$ inch thick and rhomboidal in cross-section; the others are from about $\frac{1}{4}$ to $\frac{5}{8}$ inch thick.

Similar tools have been found at Neutral sites in southwestern Ontario, but none has been reported from Iroquoian sites elsewhere in the province and in New York.

A stone object of an unusual shape, seen in Plate I, figure 34, might be described as six-sided, the different faces being rhomboidal, trapezoidal, and rectangular. It is $2\frac{1}{2}$ inches high and $2\frac{5}{8}$ by $2\frac{7}{8}$ inches in diameter. The sides were worn smooth by constant usage in some grinding operation, perhaps as a muller in grinding corn. It may also have been used in polishing stone adzes.

The object in text Figure 3, which was probably found at the site, is made of grey slate and is $10\frac{7}{8}$ inches long, $1\frac{1}{2}$ inches wide, and $\frac{7}{16}$ inch thick. The smaller end seems to have been pointed. Parts of both edges are worn smooth as if from use.

The large, chipped object in Plate XVII, figure 12, shows no signs of use, but, as suggested on page 55, it may have been intended for a scraper.

A fragment of another stone object of uncertain use is seen in Plate XVII, figure 17; it may be in process of manufacture. It roughly resembles an animal head, although it was probably not intended as such. The side illustrated shows a deep groove running parallel with the edges, and there is a notch on one side of the broader end and three on the opposite side, at the narrowest end. Part of the other side bears two groups of incised lines running in opposite directions, part of one group being at the broken edge.

The use of another object, which seems to be part of one of those round, double-convex concretions found so abundantly in the marine clays of some parts of the Ottawa valley, is also not apparent. An oval piece has been broken from one side and the fractured edge smoothed, so that the pebble is now somewhat crescent shaped.

An oval pebble, about $1\frac{1}{2}$ by $1\frac{7}{8}$ inches in diameter, has one of the sides flattened by rubbing, but it is hard to say for what purpose it was used; perhaps it is in process of manufacture.



Figure 3. Two faces of engraved stone object. From Roebuck. In Royal Ontario Museum of Archæology, Toronto (about $\frac{2}{3}$ natural size).

Bone and antler objects of unknown use are shown in Plate XVII, figures 1 to 9, 13, 14, 18, and 21 to 28. A thin tool, not illustrated (Cat. No. VIII-F-13259), is made from the back part of a deer metatarsus and has one end ground off at a sharp slant. Figures 1 to 3, and 5 show spatulate objects of bone. One with one end missing (Cat. No. VIII-F-11731) is made from a thin piece of bone, perhaps part of the plate of a deer scapula; both sides and edges are highly polished. The object in figure 3 was made from the distal half of the ulna of a dog. The paddle-shaped object in figure 1 has a thin, well-finished blade and is highly polished.¹ Another specimen (Cat. No. VIII-F-12895) is similar, except that it is only half as long and lacks the knob at the smaller end. There is also what seems to be an unfinished specimen of the same kind as the one in figure 1. The object in figure 2 is shaped like a scalpel, and the specimen with the oblique edge at one end, made from the dorsal part of a deer metatarsus, seen in figure 5, also looks like one. There is another specimen, made from the same kind of bone, but with the point more knife-like, although the edges are not sharp (Cat. No. VIII-F-10831). The purpose of the object in figure 4 is also uncertain, but it may have been an awl. A specimen made from a tibia, possibly of a fox (Cat. No. VIII-F-11978), seems to be in process of manufacture into a gouge-like tool, similar to a finished one found by Mr. White, which seems to have been made from the same kind of bone. The long, sloping, broken edges of our specimen have been partly smoothed, but the cellular part of the bone was not removed, and what would probably have been the cutting edge has not been finished. Another gouge-like tool (Cat. No. VIII-F-10808) is made from the smaller end of a metacarpal, probably of the Canada goose. Parts of several incisions, perhaps ornamental, on one side, suggest that the object had been much larger. The right lower jaw of a bear (Plate XVII, figure 18) has the articular condyle removed and almost the entire margin of the coronoid process ground and sharpened. All the teeth except one, a root of which remains in place, seem to have been removed bodily. This object may have been a pottery marker, the sharpened coronoid probably being used to make the lines on pot rims, whereas the ramus, as is suggested by the worn and polished appearance of the alveolar border, formed the handle. Another object derived from a jaw consists of half of the lower mandible of a beaver, with the artificially sharpened incisor tooth in place and the articular condyle and coronoid removed, apparently so that it could be more conveniently held while the tooth was being sharpened, or that the ramus could be retained as a handle. A rib with four deep notches on one side is seen in Plate XVII, figure 14; it may be in process of manufacture into a small harpoon point, but the notches may also be ornamental. A perforated object made from the ulna of a bear is seen in the same plate, figure 28. The proximal articular end of the bone has been almost entirely effaced by grinding and cutting, and the marrow hollow was exposed in forming the point. No signs of wearing can be seen in the hole. A few other implements, mostly derived from splinters of deer bones, although they may be unfinished awls, have such crude, irregularly shaped points, that they may have been used for some other purpose, possibly as pottery markers.

¹ Similar objects have been found in Onondaga sites in Jefferson co., N.Y. (See Beauchamp, 4, figs. 63, 64).

Problematical objects made of antler are seen in Plate XIV, figure 23, and Plate XVII, figures 8, 13, and 22 to 27. The specimen in Plate XIV, figure 23, has one side of the beam, which is at an oblique angle to the sharpened tine, more or less flattened by grinding, possibly so that it could be lashed to a handle or some other object. One end of the rounded side has been cut down at a slant and the tip of the tine is artificially sharpened. The object had been used long enough to give the pointed end a polish. The specimen in Plate XVII, figure 13, seems to have been cut from a tine and may be in process of manufacture into a slotted point similar to that in Plate I, figure 16, although, probably, it would have been much thicker when finished. The fragmentary object seen in Plate XVII, figure 8, is one of the best finished antler artifacts found here. The front is slightly convex from end to end and from side to side and the lower face is flat; nearly all the unbroken edges are finished off square. The holes are all oblong with square edges, and the inner angle of the two lower holes, on the side illustrated, is slightly worn, which suggests that the object was fastened to some other object by a cord that passed through one hole from the back and across the front to the other hole. The edges of the hole near the squared end are not worn. The writer knows of no similar artifact from Iroquoian sites elsewhere in Ontario and in New York. The function of the two antler implements in Plate XVII, figures 6 and 26, can only be surmised. The holes in both specimens were gouged out rather than drilled, but do not show signs of wear. Figures 25 and 27, in the same plate, show two other unique antler objects, both probably used for the same purpose, whatever this may have been. The one in figure 25 has one side of the larger end roughly worked down at a slant, and a wide, deep groove has been made in line with the holes. The specimen in figure 27 differs from the other in having a sharply pointed tine nearly at right angles to the larger portion. There is a small hollow in the larger end of this specimen which may be the result of decay of the soft, spongy interior of the antler. The sides bear longitudinal striæ left by the scraper that was used in working it into shape. The tips of both specimens are polished, but the holes do not show signs of wearing. Thirteen objects made from the heavy beam of deer antlers, of which two are seen in Plate XVII, figures 22 and 23, were discovered, twelve by us and one by Mr. White. One (figure 23) has a sharp, conoid point, instead of a rounded, broad point, one is grooved (Cat. No. VIII-F-9945), and another (figure 22) is perforated. What seems to be the working end on nine specimens has been cut down at a slant to the right, and on one at a slant to the left; the cross-section of this end on some specimens being either half round or curvilinear-triangular. The upper ends of all of them are also cut down at a slant, the bevel being in line with the concave side of the antler, but in all except one example in a contrary direction to the slant of the working end; probably the purpose was to facilitate fastening the object at an angle to some sort of handle, perhaps to a seat provided for it. The groove on one specimen and the hole in another were probably intended to make the fastening additionally secure. The upper ends are either left in a broken condition, slightly rounded, or squared off; all the lower ends are polished. One edge of the hole in the one seen in figure 22 shows wearing from the chafing of the lashing which bound it to the handle. Some of these objects seem to be unfinished, although some of those that

appear to be in this condition show considerable polish on the working end. The largest specimen is $7\frac{11}{16}$ inches long. The work performed with them was probably not of a rough nature, as only three out of the entire lot have the working end broken. The shafts of some were polished, which suggests that they were held directly in the hand when in use. It has been suggested that they were possibly hoes (page 89), although an implement with a broader blade would have been more suitable; however, they would perhaps serve as well in turning up the ground in preparation for planting as the "crooked or sharp branches," which Peter Kalm mentions as having been used by the Indians (I, page 341). Another use would be as mattocks for loosening from the bank the clay used in pottery-making. Still another possible use would be for loosening and removing bark from trees (See Mason, 1), although this would probably not have resulted in the uniform polish seen on the working ends of most of these objects. The writer has not seen any of these implements from nearby sites of the same culture; they have also not been found in sites of the same culture in New York; three were found in Huron sites in Victoria county, Ontario, one of them perforated (See Boyle, 4, Figure 135). What seems to have been an object of the same kind was found in a site of another culture at Frenchman bay, Massachusetts (See Abbott, Figure 195).

The phallus-like object in Plate XVII, figure 24, is carved from a piece of antler that is somewhat oval in cross-section. The oblong hole worked crosswise through the longer diameter of the oval, near the broken end, may have been intended for the reception of a bone or stone knife or chisel blade. The purpose of another hole near the head, made from both sides diagonally through the tine, is uncertain, except that it may have been intended for the attachment of a thong.

The canine of a dog seen in Plate XVII, figure 10, has one side of the root ground down, exposing the neural cavity, probably to make it smaller so as to fit into a handle with a small socket hole. The tip is worn as if from constant use.

Three small fragments and a few whole clam shells have parts of the margin worn, probably from use as scrapers in tanning, pottery-making, or wood-working. Three half shells of *Elliptio complanatus* have an irregular hole broken through the side, the holes in each case being in about the same part of the shell; but the edges of none of the holes show signs of wearing. Clam shells similarly perforated, found in Ohio (See Mills, 3, Figure 31), were used as hoes, but our specimens are all too small and fragile to have been used for that purpose. Harrington (3:270) suggests that perhaps such perforated shells were "strung together to form rattles." Eight other shells of the same species of clam were used in some operation that wore down the sides and umbonic region until in a few cases a large hole appeared; perhaps they were used as pottery smoothers. Shells of other species of clams, similarly worn, have been found in Neutral sites in southwestern Ontario and at early Huron sites in Victoria county (See author, 3, Plate VII, figures a, b).

A pottery fragment, with the two longer edges ground smooth, is seen in Plate XVII, figure 20, but what the form and use of this specimen would have been when completed can only be conjectured.

It is not known for what purpose the carbonized, button-like wooden object seen in Plate XVIII, figure 4, was used, but it may have been used in a game. The exact use of the perforated wooden disk in Plate XVII, figure 11, also is unknown. It is slightly concavo-convex and about $\frac{7}{16}$ inch thick; the hole is biconical.

Certain articles, including a piece of textile, a fragment of rope, pieces of birch bark, and a wooden dish will also be described under this head.

The piece of textile seen in Plate XVIII, figure 6, which is probably part of a bag, was found in a mixture of ashes and carbonized organic matter containing bits of bark (probably pine), 21 inches deep, in refuse deposit 15. It is entirely carbonized, which accounts for its preservation. This may be only a small portion of the original fabric, but there is sufficient to enable one to get an idea of the technique; even part of the border or selvage remains.

The fibres are about as coarse as the jute used in the manufacture of binder twine and are probably derived from the inner bark of the basswood rather than from the milk-weed or hemp nettle, both of which produce a finer fibre.

The style of weaving seen in this fabric is what is known as twined, but instead of the warp elements consisting of only a single strand, as in other pre-European fabrics illustrated by Holmes (1, Figures 5, 8, 20, 21), they consist of two-ply cords, and the weft consists of four separate strands.

The warp consists of a series of parallel cords, probably arranged in the same way as the warp on a loom, with each cord bent at the end that was to form the top or border (See Plate XVIII, figure 8A) and the two loose ends tied together at what was to be the bottom of the bag. The cords are about $\frac{1}{8}$ inch thick, loosely but evenly twisted from two strands, each of which is about $\frac{1}{16}$ inch thick. The cords are twisted to the right, but the component strands appear to have been twisted to the left. The weft elements consist of four separate strands, about $\frac{1}{16}$ inch thick, which are unevenly twisted, apparently to the left. Each pair of the weft strands is twisted half around on the other pair, enclosing each warp element separately at the intersections (See Plate XVIII, figure 8B). The spacing of both warp and weft elements is regular, the former being about $\frac{1}{16}$ inch and the latter about $\frac{5}{16}$ inch apart (See reconstruction in Plate XVIII, figure 7). The border or selvage is about $\frac{1}{2}$ inch deep and was formed by closely impacting the three upper rows of weft elements.

The fact that the weave of this fabric is so open suggests that it is part of a pouch or bag rather than of some wearing apparel. It is known that the early Iroquois used bags and pouches; Megalopensis (page 158), for instance, speaking of the Maquas (Mohawks), mentions "a Bag which they make of wild Hemp," in which they kept their dried fish.

The discovery of the fabric suggests that other kinds of woven articles were used at this site. Cartier (page 163) tells us that the Hochelagans used "four-cornered" mats, "woven like tapestry." When we consider that the culture of Hochelaga is practically the same as that of the Roebuck site, it is altogether probable that mats were used here also.

The piece of carbonized rope (Plate XVIII, figure 5) was found in a small deposit of ashes in what appears to have been a filled-in post hole, about 15 inches deep in refuse deposit 1. It is about $\frac{1}{2}$ inch thick and consists of three strands which are twisted to the left.¹ The component strands, which are about $\frac{3}{16}$ inch thick, are each composed of three broad strips of vegetal material like bark, about $\frac{1}{32}$ inch thick and $\frac{5}{16}$ inch wide, parts of some being loosely twisted and other parts tightly twisted to the right. It is impossible to determine the kind of bark. It may be either slippery elm or leatherwood (Kalm, II, page 12), both of which are used by modern Indians;² at least the strips do not show the easily separated layers of the inner bark of the basswood.

The bark object (Plate XVIII, figure 3) consists of a thick, bent piece of birch bark, about 6 inches long, $2\frac{3}{4}$ inches wide at one end and $3\frac{3}{8}$ inches at the other. It is not carbonized and owes its preservation to the fact that it was buried in the muck surrounding the spring. The cut edge of the narrow ends and one of the long edges has been smoothed. There are five stitch holes at irregular distances apart along the edge of the narrowest end, but there are none at the wider end. About $\frac{3}{8}$ inch from the edge of one of the long sides, and roughly parallel with it, is a row of five similar holes (a part of the edge is broken so there may have been six holes), the distances between which are nearly equal. About $1\frac{3}{4}$ inches from this row, and almost parallel with it, is another row of four holes. The unevenly severed edge at the wide end suggests that the piece may have been much longer. It may be part of a basket.

Large bark vessels, like puncheons, were used as containers for smoked fish at Hochelaga (Cartier, page 158), and bark casks were used for storage purposes by the Iroquois of what is now New York state (Morgan, I, page 310 and among the Hurons (Sagard, 1:135), and so probably also by the people of this site.

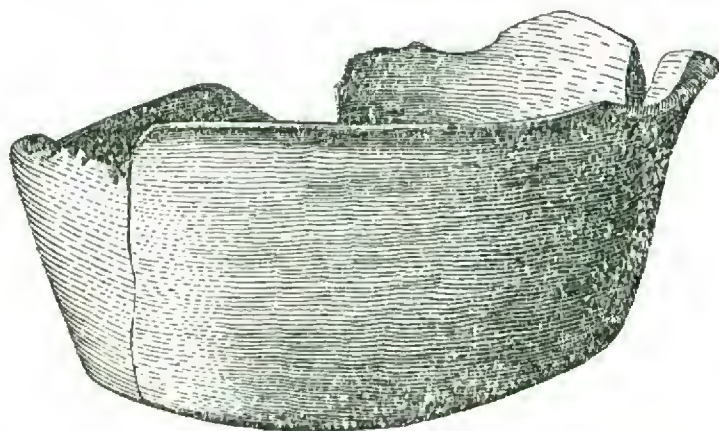


Figure 4. Wooden dish from a grave at Roebuck. In Royal Ontario Museum of Archæology, Toronto ($\frac{1}{2}$ natural size).

¹Morgan (II, p. 17) says: "They [the Iroquois] also made a common bark rope for ordinary uses, which consisted of three strands, hard twisted; a single rope being frequently 40 or 50 feet in length."

²Morgan (II, p. 16) says: "Bark rope has been fabricated among them from time immemorial. In its manufacture they use the bark of the slippery elm, the red elm, and the basswood."

A closely coiled roll of carbonized birch bark, about 1 inch in diameter and about 4 inches long, may be the remains of a torch. Both Iroquois and Algonkians are known to have used torches made of bark.¹ Even the early missionaries, following the Indian custom, used birch bark in lieu of candles.²

Text Figure 4 shows a small, smoothly finished, bowl-like receptacle carved from wood, possibly maple, said to have been found in a grave at Roebuck. The bowl is broken through about the middle and only about one-fourth of the lip remains. It is oblong, $2\frac{3}{4}$ inches long, $2\frac{1}{4}$ wide, and about $1\frac{1}{4}$ high; the bottom is rounded, the flange-like lip curves outward, and the hollow is about $\frac{7}{8}$ inch deep. The wood is dozy and may owe its preservation to being saturated with grease, pitch, or some other substance.

PROCESSES OF MANUFACTURE

Evidences of the following processes of manufacture were discovered: breaking, scorching, scorching and breaking, hacking and breaking, cutting, scoring or cutting and breaking, chipping, pecking or bruising, scraping, rubbing or grinding, polishing, drilling, perforating, punching, modelling, luting, impressing, twisting, and weaving. The use of other processes, as tanning, may be inferred.

BREAKING

This was the primary process, because stones and bones had to be broken into pieces suitable for manufacture. Some of the incisor teeth of the beaver were broken lengthwise and a few bear teeth had the dentine broken off for some purpose. Even human skulls were broken, in some cases probably to get pieces for manufacturing into gorgets like those seen in Plate XV, figures 32 and 33. The tines of a few deer antlers were broken off, some of them probably for manufacture into points for arrows. The front of some of the flattened phalanges of the deer, described under "Games," was broken before the grinding was commenced.

SCORCHING

The glenoid cavity of the deer scapulæ made into pipes (*See* Plate XV, figure 39) was scorched before it was hollowed out to form the bowl cavity, probably by laying a live coal in the hollow. A few of the flattened phalanges of the deer have the front of the bone slightly scorched, evidently to make the grinding easier, and the markings on some of them appear to have been made by applying a small live coal to the surface.

SCORCHING AND BREAKING

A few deer tines seem to have been severed from the antler by scorching and breaking.

HACKING AND BREAKING

The appearance of the severed ends of a few human bones, many pieces of antler, and a piece of wood found in the muck around the spring suggest that they were hacked and broken.

¹See *Jesuit Relations*, IX, p. 275; XVIII, p. 171; XXI, p. 247; and XXX, p. 291.

²Sagard (2: 217) says: "La chandelle de quoy nous nous servions la nuit, n'estoit-que de petits cornets d'escorce de bouleau."

CUTTING

Cutting can be seen on a large number of pieces of bone and antler in process of manufacture, and the appearance of a few of the finished artifacts shows that parts of them were shaped by cutting. Cuts apparently made with a knife are seen on many bone and antler and a few shell objects, some of them in process of manufacture. The cuts on one of the bone specimens are distinctly striate, suggesting that the knife used in cutting was chipped from stone. A piece of partly carbonized wood, found in the spring, was cut off almost squarely at one end. Flakes of chert and sharp pieces of quartz crystals, points for arrows chipped from stone (Plate I, figure 5), beaver tooth knives, and knives made of bear canines (Plate XIV, figures 2 and 3) may have been used in cutting.

CUTTING OR SCORING AND BREAKING

To separate a piece of bone and antler it was in many cases first deeply cut or scored around the circumference, which weakened it to such an extent as to permit it to be easily broken. Sharp-edged chips of chert or quartz crystals and some of the arrow-points and knife blades may have been used to do some of the scoring. Some of the cuts are wide and deep and look as if they had been made by sawing with a blunt-edged piece of gritty stone. Many pieces of bone and antler show evidence of having been severed by this process. Most of the hollow bone and the cone-shaped antler arrow-points had the larger end removed by this method of cutting. Transverse cutting and breaking can also be seen on some of the unfinished bone fish-hooks, on many of the hollow bone beads, one of them having an extra groove around the middle, probably to cut it in two (Plate XV, figure 11), and on a piece of marine shell (Cat. No. VIII-F-10305). The groove on the slab of stone in Plate XIV, figure 18, may have been made to separate the stone into two pieces, and the scoring around the ends of the shell bead in Plate XV, figure 10, suggests that the bead was in process of being shortened. Some of the pieces of bone show longitudinal cuts made with plough grinders, some of which, judging from the striæ in the grooves, were made of gritty stone; tools like the one in Plate XIV, figure 19, may also have been used for the purpose. Longitudinal cuts can be seen on some of the blanks in process of manufacture into fish-hooks and on a bone awl (Cat. No. VIII-F-10001a). Several finished artifacts show evidence of having been fabricated from pieces of bone separated from the stock bone by longitudinal grooving and breaking.

CHIPPING

Although chipping is one of the most common processes in the lithic industries of the Indians, very few of the artifacts found here show evidence of having been chipped into shape. Chipping can be seen on the points for arrows and knives in Plate I, figures 1-7; on five scraper blades, one of which is seen in Plate XIV, figure 20; on some of the axes and adzes of stone; on pieces of stone and bone in process of manufacture into artifacts; and on the basal edge of a harpoon point. Pitted hammerstones with

peripheral abrasions were probably used to do the rougher chipping on some of the larger specimens. There are no tools corresponding to the antler punches from Iroquoian sites elsewhere in Ontario (*See* author, 1, Figures 33, 34) and in New York (*See* Beauchamp, 4, Figures 53, 90, 91, and 96) presumably used to do the finer chipping on small projectile points; the scars near the tip of a few antler tines, however, may be the result of flaking by pressure.

PECKING OR BRUISING

The irregularities on chipped and other rough pieces of stone selected for manufacture into implements were removed by pecking or bruising with either angular pieces of rock or hammerstones like the one seen in Plate XIV, figure 17. The marks of pecking on all but one of the stone implements have been obliterated by the rubbing or grinding process. Some of the unfinished stone adzes, one of which is seen in Plate XIV, figure 16, show evidence of this process.

SCRAPING

Evidences of scraping, probably with sharp-edged pieces of chert or quartz crystal, can be seen on some of the pieces of antler in process of manufacture into artifacts; on some of the cone-shaped antler points for arrows, on six bone blanks in process of manufacture into fish-hooks, on the antler tools in Plate XVII, figures 25 and 27, and on the stone object in Plate XVII, figure 17. There is no doubt that wooden dishes like that in text Figure 4, and perhaps larger vessels, were hollowed by burning and then scraping out the charred parts; scrapers like those seen in Plate XIV, figure 20, clam shells, chisels made of beaver incisors, and some of the stone adze blades probably being used in the process.

RUBBING OR GRINDING

Most of the stone artifacts formed by chipping and pecking, and objects of bone, antler, teeth, and shell were rubbed into shape, probably on the pieces of rock described under "Whetstones." Many artifacts show evidence of this process.

POLISHING

Fine-grained whetstones or pieces of buckskin were probably used in polishing, although some of the objects, especially those used as tools, probably received their polish through constant usage. Artifacts with polished surfaces comprise a few hollow bone and cone-shaped antler points for arrows, bone harpoon points, stone, shell, and bone beads, a wapiti tooth, a few flattened deer phalanges, an unfinished slate gorget and other gorgets made of human skull, stone and earthenware pipes, and a few pieces of pottery.

DRILLING

A large number of artifacts have holes that appear to have been drilled, although, as mentioned on page 49, no drill points were found. It is possible, however, that some of the more slender chert points for arrows, like those in Plate I, figures 1 and 3, may have been used for the

purpose; but the tips of these do not show the signs of wear usually seen on drill points. The pointed ends of quartz crystals could have been used to make some of the large countersunk holes seen in a few specimens. The striæ in the conical bowl cavity, stem hole, and the hole in the base of the stone pipe in Plate XV, figure 47, suggest that the holes were drilled with a chipped point. Holes, apparently drilled with a point chipped from stone, are seen in the harpoon point in Plate I, figure 20; in a fragment of a slate gorget; in the wapiti tooth pendant (Plate XV, figure 4); twelve pottery fragments; in a bead made of a potsherd; and in many other beads made of stone. Most of the holes in the stone beads are biconical and lack the striæ usually seen in holes made with chipped points, but these may have been obliterated by the constant friction of the cord on which the beads were strung.

The small diameter of the hole in the shell beads (Plate XV, figures 9 and 10) suggests the use of a solid wooden spindle and sand; the hole in the largest specimen was drilled from both ends. It is possible, however, as suggested above, that these beads reached the site in a finished state from some other people, and that the drilling was done by a method not used at the site. The hole in the stems of two stone pipes may also have been drilled with a solid wooden drill.

If some of the holes were made with wooden drills and sharp sand it is possible that the spindle was rotated with some contrivance like a bow. It is not known if the pre-European Iroquois used the pump drill, but, if such an apparatus were used, the wooden disk in Plate XVII, figure 11, may have been added to give momentum to the drill.

PERFORATING

Roughly round, oval, or oblong holes in some of the artifacts seem to have been made by cutting, scraping, and gouging, few of them being uniformly round like those made with drill points. Most of them were made from one side only; a few are biconical. Holes of this kind can be seen in several artifacts, especially in the gorgets made from pieces of human skull (Plate XV, figures 32 and 33), and the bone and antler objects in Plate XVII, figures 22, 25, 27, and 28. The hole in most netting needles seems to have been gouged out (Plate XIV, figure 33). In another specimen the eye was made by gouging out a groove, $\frac{1}{2}$ inch long and $\frac{1}{8}$ inch wide, on one face and then breaking an irregularly oblong hole through the remaining thin part of the bone. The eye in the extremely curved needle mentioned on page 58 was produced by making two, deep, longitudinal grooves on each face, one $\frac{7}{8}$ inch and the other $1\frac{1}{8}$ inches long, which form a small hole where they meet in the middle.

The perforations in the modelled earthenware beads, some of which are seen in Plate XV, figures 6 and 7, seem to have been formed by modelling the clay around a twig or grass stem, which was either withdrawn or burnt during the firing, leaving a round hole. The rim around the hole in one bead (Cat. No. VIII-F-11833) appears to be the result of working the twig or grass stem back and forth in the hole in order to enlarge or smooth the opening. The method of making the stem hole of earthenware pipes is described on page 84.

PUNCHING

Ornamental pits or depressions on pottery, made by punching, have been described in the section on pottery manufacture. Round depressions seen on earthenware pipes were similarly produced. The holes in some of the modelled earthenware beads may have been punched from both sides with some of the finely pointed bone awls. The stitch holes in the piece of birch bark in Plate XVIII, figure 3, also appear to have been punched with an awl.

MODELLING

The modelling of pottery has been described under "Pottery." Earthenware disks and beads were also modelled. The most elaborate examples of modelling, however, are the earthenware pipes and the human and animal forms seen on some of them. Most of the modelling was done with the fingers, but there is no doubt that special tools, perhaps the knife-like and spatulate objects in Plate XVII, figures 1, 2, and 5, were used for some of the work.

LUTING

Most of the raised ornamentation seen on pottery, the upper edges of some of the pots, and some of the human face masks and bird forms on earthenware pipes, were applied to the surface by luting. Luting scars can be seen on two of the pipes (Plate XVI, figures 6 and 7).

IMPRESSING

Decorative effects on pottery produced by impressing have been described under "Pottery"; others similarly produced can be seen on some of the earthenware pipes.

PAINTING

None of the pottery shows evidence of having been painted, but fragments of three stems of earthenware pipe are painted red. Other objects were probably painted, but owing to the fact that, as stated on page 61, the paint was merely mixed with grease, it soon disappeared from all but the few specimens mentioned.

TWISTING

The carbonized piece of rope (Plate XVIII, figure 5) and the weft and woof elements of the piece of carbonized textile (Plate XVIII, figure 6) show that vegetal fibres and bark were twisted into cords and ropes. A few of the pottery fragments show texturing on the outside surface with paddles apparently wound with twisted cords.

We have no evidence that the northern Iroquois used a spindle for twisting fibres into cords.

WEAVING

The piece of textile seen in Plate XVIII, figure 6, is the only specimen of weaving found here (See description on page 90). It is possible that the perforated netting needles, especially those with the eyes large enough to admit the smaller weft strands, were used in the weaving of this and other textiles and of the mesh of snow-shoes.

TANNING

That hides were tanned may be inferred, but we can learn very little respecting the methods employed. Scraper blades chipped from stone were probably used to remove flesh from hides. The small stone tools considered as adze blades and stone tools like the one seen in Plate XIV, figure 19, may also have been used for the purpose. Several radial bones of the deer with the external surface worn glossy from use may have been used in combination with the ulna to remove the hair from hides, as among the Micmac (Speck, 1, Plate XXV, figure *b*) and Navaho (Mason, 2, page 575 and illustration (inset) in upper right hand corner of his Plate LXII).

COMMERCE

Very few evidences of trade and commerce with people of other stocks, occupying regions remote from the site, were discovered; Dawson also comments on the scarcity of such evidences at the site of Hochelaga (3:165). The few specimens discovered may have been obtained through the channels of trade, or war, or on expeditions to the seaboard.

The rocks and minerals found at the site occur either locally or within a journey of a day or a few days from the site. None was introduced by trade.

As among the prehistoric Iroquois generally, the trade in shells seems never to have been very extensive, only a few beads, two worked pieces, and an unworked fragment of a shell of *Venus mercenaria* being found; the last-mentioned lay on the surface of the ground, and so may have been left by white people, although a shell of *Mytilus edulis*, abundant on the Atlantic coast, was discovered at a site on lot 12, con. VIII, Fenelon tp., Victoria co., Ontario, about 75 miles west of Roebuck.

Guest (page 273) briefly described a perforated object from the site, which he thought was part of a walrus tooth, but it probably was not a tooth of this animal, although, as mentioned under "Materials," an unworked specimen was found on a site in Victoria county, which is much farther from the sea.

It has been mentioned (page 20) that one of the bone harpoon points looks as if it were derived from the bone of a sea mammal, possibly a cetacean from the gulf of St. Lawrence or the Atlantic coast. Another specimen is shaped like some harpoon heads from Micmac sites in Nova Scotia and may have been obtained from those Indians in trade.

ART

The art of the people was mainly decorative and is seen on pottery, pipes, and stone, bone, and antler artifacts. It is probable that perishable materials, such as skins, bark, and wood, were decorated with painted designs,¹ and that life forms were in some cases carved in wood;² but the people here seem to have found their chief channel for artistic expression in the decoration of their pots and pipes.

The art is mainly geometric, with both curvilinear and rectilinear designs. There are a number of life forms carved in stone and antler and modelled in earthenware.

The geometric elements used in the decoration of earthenware pots comprise: notches; round, half-round, oval, oviform, oblong, lenticular, triangular, crescentic, and crude or irregular depressions; vertical, diagonal, horizontal, and curved lines; circles; and ornamentation in relief. A few of the more simple elements occur on earthenware pipes and a few bone objects.

Notches, which are the most simple decorative elements, occur on the edges of rim fragments of a few pots (*See Plate II, figure 26*); on the outer and inner angles of a large number of other rims, in many cases on both outer and inner angles; on a few shoulder fragments; on the stems of a few earthenware pipes; and on a few bone specimens (*See Plate XIV, figures 28 and 32, and Plate XVII, figure 9*). There are notch-like indentations along the lower angle of the collar of many pots, some being round; oval (*See Plate IV, figure 14, and Plate VII, figure 3*); oviform (*See Plate VIII, figure 2*); oblong (*See Plate VIII, figure 10*); rectangular; and lenticular (*See Plate IV, figure 19, Plate V, figure 12, Plate VI, figure 10, Plate VII, figure 7, Plate VIII, figures 19, 20, and Plate IX, figures 1, 18*). Other indentations, which might be described as clavate, and which are somewhat like the lenticular ones, except that one of the ends is much wider and rounded, occur on the lower angles of a few rims. There are also triangular indentations; rhomboid-ovate depressions occur on the lower angle of another rim.

Notches of the kind seen in *Plate III, figures 22, 31, 35, Plate IV, figures 8, 12, 18, Plate VII, figure 2, Plate VIII, figure 8, and Plate IX, figures 2, 5-7*, occur on the lower angle of rims of many pots, in a few cases forming the sole decoration, but they are not seen on very narrow collars or on those with very narrow, angular lips. Similar indentations occur on pottery from sites of the same culture in Grenville, Stormont, and Glengarry counties, Ontario; the site of Hochelaga (*See Dawson, 3, Figure 16*), and other sites near St. Regis and Lanoraie, Quebec; from a site in Jefferson county, New York (*See Skinner, 4, Plate XXVIII*); and from Vermont (*See Perkins, 3, Plate XXXVI, figure 3*). They are also seen on early Huron pottery from Victoria county (*See Boyle, 4, Plate I, figures 10, 11, 14, 18*), and on pottery from sites near Seneca river, New York (*See Beauchamp, 2, Figures 17, 57*), but rarely on non-Iroquoian pottery, occur-

¹Although Cartier did not observe anything of the kind at Hochelaga, it is possible that, as among the Oneida, as we learn from Van Curler, the people of this site painted "all sorts of beasts" on the fronts of the houses and that around the entrance of the grave houses they "painted dogs, and deer, and snakes, and other beasts" (Wilson, pp. 92, 93).

²Van Curler speaks of a "big wooden bird" over the entrance to the chief's grave at Oneida castle, and on another page he mentions "three big wooden images, of cut wood, like men," which stood above the gate of the castle.

ring only on that of the Chesapeake-Potomac group from New River valley and Luray, Virginia (*See* Holmes, 2, Plates CXXXIII, CXXXIV), on Mandan pots (*See* Will and Spinden, Plate XXXVII, figure *e*), and on a pot from a mound in Manitoba (*See* Smith, 2, Plate XLIV, figure 4).

Round, flat-bottomed depressions can be seen on a few rim fragments, being in a vertical row of three on one (*See* Plate VIII, figure 2), and in a triangular group on two others; also on three fragments of earthenware pipes.

Conical depressions of various sizes, which are in vertical or horizontal rows, in triangular groups of three, or in the centre of circles, occur on rim, neck, and shoulder fragments (*See* Plate II, figure 20, Plate VI, figure 25, and Plate IX, figures 1, 19, 24).

Small, oval depressions are the sole decoration on the rim fragment in Plate II, figure 33, on a few neck fragments, on a number of shoulder fragments, and on a few earthenware pipes (*See* Plate XV, figure 37). They are combined with other decoration on the rims and shoulders of many other pots, some of which are seen on the fragments in Plate IV, figure 16, Plate V, figure 28, Plate VI, figures 4, 14, 19, 21, 22, Plate VIII, figure 29, and Plate IX, figure 12.

Half-round depressions are seen in combination with other decoration on a few rim fragments (*See* Plate VI, figure 8).

There are oviform depressions on a few rims, one of which is seen in Plate V, figure 6 (diagonal row), and on a few shoulder fragments.

Oblong depressions of various lengths, a few of which are horizontal, occur on a few rims, in a few cases on the edge, in another case on the inside, and in still others in the centre of circles (*See* Plate VIII, figures 14, 26, and Plate IX, figures 15, 16, 18, 20). There are vertical depressions around the top of the pipe bowl in Plate XV, figure 43.

Lenticular depressions occur with other decorative elements on a number of rims, in some cases on the inside (*See* Plate III, figure 1, and Plate VII, figure 7); on a few neck fragments; on many shoulder fragments, some of which are seen in Plate II, figure 34, Plate V, figure 17 (along bottom), and Plate VI, figure 2; and on a few earthenware pipes (Plate XV, figure 35, and Plate XVI, figure 26).

Depressions resembling the clavate indentations along the lower angle of the collars, only smaller, occur with other decorative elements on a few rims (*See* Plate V, figure 1), and on a few neck and shoulder fragments (*See* Plate VI, figure 9).

There are angular, somewhat diamond-shaped, depressions in combination with other decoration on a few rims, and they form the sole decoration on the inside of a few others.

Linear crescentic and other curved depressions, consisting of those made with the finger-nails, occur on rim fragments of a few pots, in some cases being the sole decoration (*See* Plate II, figure 31, and Plate III, figure 4), and in others combined with other elements, as on the rim fragment in Plate III, figure 30, on the edge of another rim, on the neck of the fragment in Plate III, figure 17, and on the neck, shoulder, and body of the small broken pot in Plate II, figure 22.

Reniform depressions can be seen on the edge of a few rims and a few shoulder fragments of pots.

Triangular depressions are the sole decoration on one rim and they are combined with other decorative elements on a few others; also on a few shoulder fragments (*See* Plate II, figure 38, and Plate VI, figure 15) and earthenware pipes.

There are peculiar depressions in the triangular space on the rim fragment in Plate VI, figure 10; others are seen on the shoulder fragment in Plate II, figure 21.

Crude, irregular depressions occur on the rim fragments in Plate VI, figure 17 (around rectangular plat).

The lines on the pottery are vertical, diagonal, horizontal, and curved.

The length of the vertical lines depends either on the width of the collar or the width of the rest of the pattern of which they are a component. In some cases they form the sole decoration on the outside and inside of the rims (*See* Plate III, figure 1), and on shoulder fragments (in one instance in two rows). They occur in combination with other elements on the outside of the rim, being in a row along the top of the collar on most of them (*See* Plate III, figures 6, 14, 16, 23, Plate IV, figures 11 and 12 (along top), Plate V, figure 16 (along top and bottom), Plate VI, figures 24, 26 to 29 (along top), Plate VII, figure 6 (along top), and Plate VIII, figure 12); on the inside of a few rims; and on a few shoulder fragments (*See* Plate II, figure 34, and Plate VI, figure 6). Longer vertical lines, in some cases with other decorative elements between two or more of them, can be seen in groups of from two to thirteen below the peaked parts of the rims (*See* Plate IV, figure 20, Plate V, figure 9, Plate VI, figures 21 and 27, Plate VIII, figure 9, and Plate X, figure 7). Vertical lines are also seen in the grooves between the ridges of the "corn-ear" pattern on a few fragments (*See* Plate V, figures 21 to 24, and 27), and in the wide, vertical grooves on some of the angular lips (Plate X, figure 17). Transverse lines, forming the sole decoration on the flattened edge of some of the rims, may be considered here. They occur in combination with other elements on the edge of rims of a few other pots. In a few instances there are three, six, and eight transverse lines on the peaked part of the rim only.

The diagonal lines slant to the right and left. Short lines slanting to the left are the only decoration on a number of pots including the outside (*See* Plate III, figure 3), inside, and the edges of the rims, and the shoulders, a double row in one instance. They occur in combination with other elements on rim fragments of many other pots, but mostly at the top of the collar (*See* Plate II, figure 29, Plate III, figures 12, 14, 15, 18, 20, Plate IV, figures 6, 7, Plate VI, figure 4, Plate VII, figures 3, 7, 11, and Plate VIII, figure 3), on the edge of the rim (Plate II, figure 9), and on a few shoulder fragments. Short, diagonal lines slanting to the right occur less commonly than those slanting to the left. They form the sole decoration on the outside, inside, and edge of rim fragments of a few pots; and on a few neck and shoulder fragments, in one instance being in a double row. They are combined with other decoration on rim fragments of many pots (*See* Plate III, figures 13 and 24); on the edge of another rim fragment; on a neck fragment; and on a few shoulder fragments.

Short, diagonal lines slanting both to left and right are seen on the pot handle on Plate X, figure 16, and on a fragment of an earthenware pipe (*See* Plate XV, figure 36).

There are short, diagonal, incised lines on a few bone awls.

The horizontal lines used in the decoration of pottery and earthenware pipes are of various lengths. There are rows of short lines between vertical (in one instance slightly oblique) lines on a few rims (*See* Plate IV, figures 9, 22, and Plate VI, figure 28); on the vertical ridges of the "corn-ear" and related patterns (*See* Plate V, figures 12, 14, 16, 22, 23, 25, 27, and Plate X, figure 1); on the vertical angle of several angular lips (Plate VII, figure 6). Short lines partly encircle the handles of two pots (*See* Plate VII, figure 10); and they occur in two wide groups on a fragment of an earthenware pipe (Cat. No. VIII-F-12269). Longer lines are seen in rectangular plats on a few rim fragments (*See* Plate IX, figure 18), and between the triangular groups of circles on a few others (*See* Plate IX, figure 19). Horizontal lines in some cases constitute the sole decoration on angular lips and they also occur on the bottom of a few lips.

Long, horizontal lines occur on the rim, neck, and shoulder of pots and on bowls of earthenware pipes. Bands of from one to seventeen lines are the sole decoration on the outside, inside, and edge of rims, on the neck (some of them immediately below the overhanging collar and others in the middle), and shoulders of pots. They are combined with other decorative elements on the outside, inside, and edge of rims of many other pots. Some of the more noteworthy combinations are seen in Plate II, figures 9, 10, Plate III, figures 20, 23, 25, 26, 28, Plate IV, figures 13, 19, Plate V, figure 16, Plate VI, figures 3, 8, 20, 25, 26, 28, 29, Plate VII, figure 2, Plate VIII, figure 15, Plate IX, figure 8, Plate X, figures 9, 11, and Plate XI. They are also seen on the necks (Plate III, figure 17, and Plate VI, figure 7) and shoulders of some of the pots (Plate II, figure 34, Plate III, figure 20, Plate VI, figure 12, and Plate VII, figures 3, 8, 11), and on bowls of earthenware pipes (Plate XV, figures 34, 36, 38, 40, 41, 43, 44).

The few curved lines are in most cases apparently the result of accident rather than design. Those on two rim fragments, one of which is seen on Plate V, figure 4, are almost curved, but it is apparent that they were made with difficulty.

None of the pottery was decorated with a scroll or guilloche, as on pottery from Ohio (*See* Holmes, 2, Plate CLXII), and it is also absent from Iroquois pottery from New York (*See* Parker, 3:499-500).

Deep, vertical, diagonal, horizontal, and curved grooves occur on a number of pots and earthenware pipes.

The vertical grooves (exclusive of those between the ridges of the "corn-ear" pattern) are long (*See* Plate V, figures 8, 16, and Plate VII, figure 6), in a few cases extending only partly across the collar (*See* Plate V, figures 10, 13, 20), and they are graduated in length on a few other rims (*See* Plate V, figure 12). There are short, vertical grooves on the shoulder fragment in Plate V, figure 17. Other grooves are seen on the edge of a few rims and on the peaks of a few others.

Diagonal grooves, some of them wide, can be seen in association with other decoration on a few other rim fragments (*See* Plate V, figure 6), and there are groups of three, four, and five grooves on the fronts of the bowls of a few earthenware pipes. Two diagonal grooves slanting to the right and left, and forming V-shaped figures, occur on a few rims (*See* Plate V, figures 2, 3, and Plate X, figure 10); the two outer grooves on the fragment in Plate V, figure 15, are slightly oblique.

Horizontal grooves occur on a few rims (*See* Plate IV, figures 10, 11); and a deep one can be seen on the edge of a few rims; others occur on the peaks of a few rims (*See* Plate II, figure 13, which shows the top of the angular lip in Plate IX, figure 23). There are groups of three, four, and five, short, horizontal grooves on the bowls of a number of earthenware pipes (Plate XV, figure 45), the grooves being graduated in length, with the longest one at the top on a few bowls. Only the lowest groove of a group of four, on another pipe, is shorter than the others. The grooves occur in combination with other decorative elements on a few other pipes; most of them having a round pit at both ends of the groove; but one, in addition to the pits, has a row of more or less round pits on the ridge between the two upper grooves and on the one above the lower groove. The grooves are associated with a more complex type of decoration on a badly broken pipe bowl (Cat. No. VIII-F-13123a) and they are combined with a probable bird form and circles on another (Cat. No. VIII-F-13137).

Wide, deep, encircling grooves are the sole decoration on bowls of a few earthenware pipes (Cat. No. VIII-F-11074); and they are combined with other decoration on others. There are one and two, wide, encircling grooves between bands of three, six, seven, and nine, finer, encircling grooves on several pipes (*See* Plate XV, figures 41 and 44).

The grooves and lines go only part of the way around the bowls of some of the earthenware pipes, especially those with human face masks, owl heads, and lunate forms on the back. There is a group of six grooves, with a row of round depressions below, on the back of the human head on the pipe bowl seen in Plate XVI, figure 21. The decoration on a few broken bowls is like that on the one in Plate XVI, figure 12. The back of the bowls in Plate XVI, figures 3, 14, and 18, bears a similar pattern, except that there is a row of pits in each of the deeper grooves and along the bottom of the collar. The decoration on the front of the broken bowl in Plate XV, figure 42, consists of eight grooves, with pits at both ends of each groove and with a row of similar pits along the top and bottom of the collar.

The longitudinal grooves on two sides of the stem fragment of an earthenware pipe, seen in Plate XVI, figure 27b, were probably intended to be ornamental.

Curved grooves can be seen on the rim fragment in Plate V, figure 1.

Circles occur on many rim, neck, and shoulder fragments of pots, but apparently never on all three parts of the same pot, and on a few earthenware pipes. They are rarely seen on the extremely convex collars.

Most of the circles seen on pots and pipes are simple. Others have a small, round pit in the centre (*See* Plate VI, figure 25, Plate VIII, figure 12, Plate IX, figures 19, 21, 24, and Plate X, figure 20), and, in one case, eight small pits around the central pit; a large hollow in the centre (*See* Plate VIII, figure 13); a small oblong depression in the centre (*See* Plate VI, figure 29, Plate VIII, figures 14, 26, and Plate IX, figures 16, 18, 20); an arrow-head like depression in the centre (*See* Plate VIII, figure 16); and short, linear depressions (*See* Plate IX, figure 12). Concentric circles occur on only one of the rims (*See* Plate VIII, figure 15). These and the circles with a pit in the centre, although produced by a different method, remind one of the nucleated circles on Eskimo artifacts (*See* Hoffman, pages 813-827 and 933-935).

The circles are arranged in single, double, and triple vertical rows, diagonal rows, horizontal rows, and in groups of three, four, and five circles.

Single, double, and triple vertical rows of from two to seven circles (depending mostly on the width of the collar and the size of the circles, although in a few cases the number of circles in a row varied on the same rim) occur on many rims and a few necks and shoulders of pots, and on a pipe bowl. Some of these are seen in Plate VI, figure 17, Plate VII, figure 1, Plate VIII, figures 1, 15, 19, 23, and Plate X, figure 11.

There are single diagonal rows of from two to twelve circles, mostly slanting to the right, in combination with vertical rows on a few pots.

Horizontal rows of circles, in a few cases forming the sole decoration, occur on a few rims, necks, and shoulders of pots (See Plate VII, figures 3 and 8, and Plate VIII, figures 4, 22, 25, 27, 28), and on the bowls of two earthenware pipes.

In a few cases the circles occur in groups of two under the peaked parts of the rim, and at intervals around the rim on a few other pots (See Plate VIII, figure 16, and Plate X, figure 15). Triangular groups of circles, which are placed at the top, middle, or bottom of the collar, occur on ordinary overhanging rims (See Plate IX, figures 3, 13); on angular lips, some of which are seen in Plate IX, figures 14, 17, 23; on the angles of polygonal rims (Plate VII, figure 2, and Plate IX, figures 5-7), mostly below the peaked elevations of the rims; above the handle (Plate X, figure 16), and below the handle. The groups are side by side on the rim of the pot seen in Plate VII, figure 11. They are seen with a diagonal row of circles on the fragment in Plate IX, figure 13; with a vertical row on two rims; with both vertical and diagonal rows on two others; and with a horizontal row on the shoulder fragment in Plate VIII, figure 28. These groups of circles are also seen in other positions, being upside down on a few angular lips, on the angles of a polygonal rim, and below the peaks on several other rims (See Plate IX, figure 4). Another arrangement is seen on the lip fragment in Plate IX, figure 8.

Groups of four circles, forming a square, are seen on a few rim fragments (See Plate VIII, figure 18).

The arrangement of the circles seen on the rim fragment in Plate IX, figure 9, occurred on six pots, and that on the one in figure 10, in the same plate, on two others.

Although some of the other groupings of circles are seen on pottery from Huron and Mohawk-Onondaga sites, the most common on Mohawk-Onondaga pottery consists of triangular groups of circles. Pottery with this motive has been found on sites in Grenville, Stormont, and Glengarry counties, Ontario; Hull (See Smith, 2, Plate LXXXIII), Huntingdon, Hochelaga, and Berthier counties, Quebec; Jefferson county, New York (See Skinner, 4, Plates XXVIII, XXIX), and in Vermont (See Perkins, 3, Plate XXXVI, figure e). It is seen on only a few Neutral pots (See author, 8, Plate XIV, figures 18-20). It also appears on a Mandan pot from North Dakota (See Holmes, 2, Plate CLXXV, figure a), on a pot from Ohio (See Shetrone, Figure 3), and on another from Florida (See Moore, 6, Figure 3).

Ornamentation in relief, consisting of vertical, diagonal, and horizontal ridges and V-shaped and trifid figures, occurs on rim and shoulder fragments of a few pots (See Plate II, figure 34, Plate V, figures 5, 28, 29, and

Plate VIII, figure 27). Raised ornamentation like that on two fragments of one vessel (Cat. No. VIII-F-11687*b* and VIII-F-11690) is seen on a pot from a site of the same culture on lot 21, con. X, North Burgess tp., Lanark co., Ontario (See Boyle 5, Figure 2), but ornamentation like this and other figures seen in Plate X, figures 1 to 6, are lacking on pottery from other Iroquoian sites.

In most cases the decoration on the rims, necks, and shoulders of pots and a few pipes consists of designs composed of two or more different elements, most of the combinations being complex. Some of the simple combinations consist of a row or band of one kind of element (either vertical, lenticular, or oblong depressions, or vertical, diagonal, or horizontal lines of various lengths), above or below, or both above and below, rows of notches, oval depressions, circles, or lines (See Plate II, figure 28, Plate III, figures 6, 10, 15, and Plate XV, figures 38, 40, and 41). In other combinations of from one to four kinds of elements the bands or rows of different elements occur twice, and in a few cases three times in the same pattern (See Plate III, figures 16 to 18, 24, Plate VIII, figure 27, Plate X, figure 9, and Plate XV, figures 36, 43).

Reticulate designs, formed by combination of either vertical and horizontal or diagonal and horizontal lines, and diagonal lines slanting in opposite directions, some of them crossing each other more or less at right angles, occur on a number of pots, in a few cases being the sole decoration (See Plate III, figures 21, 29, 32-35, Plate V, figure 9, Plate VIII, figure 25), and on the bone object in Plate XIV, figure 27. There are also groups of cross-hatched areas at intervals around several other rims.

Other complex designs, occurring on a few rims, are seen in Plate IV, figures 2, 7, 16, Plate VII, figure 4, Plate VIII, figure 15, and Plate IX, figure 3.

Decoration consisting of groups of diagonal lines, with narrow, rhomboidal, blank spaces between each group and a row of vertical, linear depressions or triangular depressions along one side of each space, occurs on a few rims and shoulder fragments (See Plate VI, figure 15). A variant of this pattern is seen on the fragment in Plate VI, figure 14.

Other designs, occurring on a number of rims, consist of a series of square or rectangular panels, separated from each other by groups of from five to ten vertical lines (in a few instances including either a vertical row of circles or short horizontal lines), each panel being divided into two triangular plats by from three to nine lines drawn diagonally from one corner to another. The triangular plats have a row of oblong or linear depressions either at the narrow ends only (See Plate VI, figures 26-28); along both sides of the diagonal lines or hypotenuse of each triangular plat (See Plate VI, figure 21); along the hypotenuse of one of the triangular plats and across the narrow side of the opposite plat; along the narrow side of each plat and top and bottom of the panel, parts of one of the plats in a few cases being filled with horizontal lines (See Plate VI, figures 26, 29); along the narrow side and hypotenuse in the lower plat and along the narrow side and top in the other (See Plate VI, figure 25); on both sides of the diagonal lines and across the narrow sides of each plat; along the top and bottom of the panels and each side of the diagonal lines; or along all sides of the plats. A further variant is seen in Plate VI, figure 22.

An unusual pattern consisting of a rectangular plat, with a row of crude depressions around the four sides, in combination with other decoration, is seen on the rim fragment in Plate VI, figure 17. Another unusual design, occurring on a few rims, consists of a row of rectangular plats separated from one another by groups of vertical lines, triangular plats filled with diagonal lines, and triangular groups of circles (*See* Plate IX, figure 18).

Triangular figures filled with vertical or diagonal lines occur on the neck of a small pot (*See* Plate VI, figure 11), on a few shoulder fragments, the hypotenuse in a few cases being paralleled by diagonal lines as in those seen in Plate VI, figure 12, and Plate VII, figure 8 (on the bilge); on a bone awl (Cat. No. VIII-F-11388); and on an object made of a deer phalanx (Plate XV, figure 21).

Other patterns with triangular plats, which in some cases are either partly or entirely blank, occur on a few pot fragments, one of them with a row of depressions along the bottom being seen in Plate VI, figure 23, and another, but blank, in figure 1, in the same plate. In one case the plats, with a row of small depressions along one of the sloping sides, form part of a pattern including triangular plats filled with diagonal lines, a triangular group of three circles, and a row of short, vertical depressions along the lower angle of the rim. The design on the shoulder fragment in Plate VI, figure 6, is unusual and resembles a design on a rim fragment from an Onondaga site in Jefferson county, New York (*See* Skinner, 4, Plate XXXII, figure 4). The triangular space enclosed by the two ornaments seen on the rim fragment in Plate X, figure 3, besides the decoration on the ornamentation in relief, has a row of depressions extending diagonally across the space and another row of larger depressions across the bottom. The design on the neck portion of the fragment seen in Plate VI, figure 7, is similar, except that it lacks the ornamentation in relief.

The decoration of the pipe stem in Plate XVI, figure 24*a, b*, consists of a series of converging lines forming a triangular figure on one side, and of two converging lines with a series of transverse lines on the other; there is also a line along both narrow sides of the stem.

Chevrons are the most numerous of the more complex patterns, occurring on many fragments of the rim, neck, and shoulders of pots,¹ on five earthenware pipes, and on a fragment of bone (Cat. No. VIII-F-10189). They are of several different types (*See* Plate XIII). The most common type, consisting of two opposing rows of triangular plats, filled with diagonal lines slanting to the right and left in alternate plats, occurs on many rim fragments and a few neck fragments (*See* Plate VIII, figures 11, 13, and Plate IX, figures 7, 21); on the bowls of two earthenware pipes (Cat. Nos. VIII-F-13139 and VIII-F-13274) and on both sides of the stem in Plate XVI, figure 27*a*. The type of chevron seen in Plate XIII, figure 2, occurs on a few rim and shoulder fragments (*See* Plate V, figure 16). It is like a Hoche-lagan pattern and also occurs on pottery from Huron sites in Simcoe county, Ontario, on Onondaga pottery from Onondaga county (*See* Beauchamp, 2, figure 16), on Mohawk pottery from Hamilton county, New York (*See* Reid, Plate III), and on Andaste pottery from Pennsylvania (*See* Wren, Plate 8,

¹Owing to the very fragmentary condition of most of the pottery it is impossible to say what proportion of these pieces are those of pots with chevrons on the rim and neck, on the rim and shoulder, or on the rim, neck, and shoulder. For this reason, also, it was impossible for us to determine the type of chevron on many of the fragments.

figure 6). A variation of the pattern is seen on a rim fragment, and on a few shoulder fragments, one of which is seen in Plate V, figure 17 (in this specimen one of the plats with horizontal lines bears in addition a row of short, diagonal depressions along the longer side). A further variation of this type of chevron, which occurs on a few rim fragments, differs from those just described in having one row of trapezoidal plats filled with diagonal instead of horizontal lines (See Plate XIII, figure 3). The arrangement of the triangular plats as in the pattern seen in Plate XIII, figure 4, is unusual. In another type of chevron the triangular plats are widely separated and the space between each two plats is filled with diagonal lines (See Plate XIII, figure 5). One of the plats of a chevron of the first type encloses a small, square plat filled with diagonal lines (See Plate XIII, figure 6). Chevrons composed of two opposing sets of plats shaped like scalene triangles, filled with diagonal lines, as in Plate XIII, figure 7, occur on many rim fragments, two of which are seen in Plate VII, figures 9 and 10. The position of the plats and the direction of the lines are reversed on other rims (See Plate XIII, figure 8). Other variations of this pattern are seen in Plate IX, figure 18, and Plate XIII, figure 9. The pattern seen in Plate XIII, figure 10, which occurs on a few rims and on a bowl fragment of an earthenware pipe, differs from the others in having the triangular plats in the upper row filled with vertical lines. The type of chevron in Plate XIII, figure 11, occurring on a few rim fragments (See Plate IV, figure 25), consists of a row of isosceles triangles with their narrowest side vertical, the spaces at top and bottom forming scalene triangles; this is also a Hochelagan pattern. The plats of another type of chevron occurring on many other rims (mostly with convex collars) are trapezoidal instead of triangular (See Plate XIII, figure 12). Other chevrons are composed of more irregularly shaped plats, as in Plate XIII, figures 13-18. In the pattern seen in figure 13, which occurs on a few rims, the plats in the upper row are trapezoidal and the lower triangular. The unusual type of chevron seen in Plate XIII, figure 19, occurs on a few rim fragments. Another unusual design is seen in Plate XIII, figure 20; it probably extended around the rim. In a few cases the triangular plats of the chevron are separated by bands of from two to four diagonal lines, the filling of the lines in both upper and lower plats being all in the same direction (See Plate XIII, figure 24).

Only a few of these chevron patterns are very narrow; one of the narrowest being seen on the rim fragment in Plate IX, figure 8, half of the space, in this instance, being filled with other decorative elements.

Chevrons form the sole decoration on either the rim, neck, or shoulder of several pots (See Plate IV, figures 5 (neck), 17, 24, and Plate X, figure 19), and on the earthenware pipe stem in Plate XVI, figure 27a. They are combined with other decorative elements on many other pots and on a few earthenware pipes (See, among others, those in Plate IV, figures 13, 15, 16, Plate VII, figures 2, 6, Plate VIII, figures 13, 20 (unusual), Plate IX, figures 20, 21, and Plate XIII, figures 26-28, 31-34).

Another type of what may be considered a chevron, occurring on several rims and a few neck and shoulder fragments, consists of a design resembling that in Plate XIII, figure 2, except that in most cases the alternating plats are left partly blank, with either linear or other impressions along two or all sides of the field (Plate VI, figures 2, 9, and 13), or, besides those impres-

sions, with the plats partly filled with horizontal lines (Plate VI, figure 4). The design occurs in combination with ornamentation in relief on a few rims and shoulders. In a few other designs the plats are trapezoidal instead of triangular (See Plate V, figure 28, and Plate VI, figures 19, 20). Other variants are seen in Plate VI, figures 1, 8, 23.

The continuity of the pattern on many of the rims, especially at the angles of the polygonal rims and below the peaked parts of others, is broken by the introduction of other decorative elements, including groups of vertical lines or grooves, circles, or more complex combinations of different elements, the latter in some cases necessitating adjustment of parts of the adjacent decoration on either side; some of these are seen in Plate IV, figures 18, 19, 21-24, Plate V, figures 1-4, 16, Plate VI, figure 18, Plate VII, figures 6, 9, 11, Plate VIII, figures 9, 15, 29, Plate IX, figures 5, 9, 14, 16-18, 20-22, 27, Plate X, figures 15-17, 19, and Plate XIII, figures 21-23, 25, 27, 29, 30.

Besides the decorative elements on the bone objects, mentioned above, there are rows of short, incised markings on a few other bone objects, some of them apparently unfinished (Plate XIV, figures 29, 30, 31). One of them bears a design similar to that on the stem of the pipe in Plate XV, figure 35. The incised markings on some of the objects derived from phalanges (Plate XV, figures 21, 24) may have been decorative.

The supreme æsthetic achievement of the people of this site was the representation of human and animal forms modelled in earthenware or carved in stone, the majority on earthenware pipes. There are also a few representations of what appear to be vegetal forms. Aside from human forms, there is only one possible mammalian form, although such forms are common at Huron and Tionontati sites, especially those of post-European times. All except three of the human forms consist of faces only.

What is probably the most simple representation of the human face consists of the triangular groups of three circles and conical and elliptical depressions, mentioned on pages 45, 99, and 103, the small depressions in the middle of some of the circles, in some cases, making the resemblance to a face still more realistic (See Plate VII, figures 2, 11, and Plate IX, figures 1-3, 5-7, 12-25. The large face seen on the rim fragment in Plate IX, figure 27, differs from the others in having the mouth represented by a long, elliptical depression instead of a circle. The group of four circles on the rim fragment in Plate IX, figure 9, may have been intended to represent the eyes, nose, and mouth. As a rule, however, not only at this site, but at a site of the same culture in Jefferson county, New York (Skinner, 4:147-148), the eyes and mouth alone are represented, and this is also true of most of the engraved representations of the human face found in Canada and the United States (See author, 5:42). One of the faces, in addition to the circles, has a prominent nose (See Plate IX, figure 25). Beauchamp (4:244) also has noted "a rude attempt at a nose in connection with the three conventional circles," on pottery from New York. It is possible that the vertical lines between the two upper circles on two other rim fragments, one of which is seen in Plate IX, figure 18, and the vertical lines with a row of small oval depressions between, on the fragments in Plate IX, figures 20 and 21, are also conventionalized representations of this feature. The face seen on the shoulder of the pot in Plate X, figure 21, is surrounded by a group of oval depressions in the form

of a diamond. Similar groups of circles on pottery from New York are enclosed with diamond-shaped figures of trailed lines (*See* Beauchamp, 2, Figures 67, 68, and Skinner, 4, Plates XXVII, XXVIII).

Modelled representations of the human face in relief, or in the round, are seen in Plate IX, figure 26, Plate XV, figure 31, and Plate XVI, figures 14 to 21. There seems also to have been a small human face in the middle of the semicircular part of the large crescent on an earthenware pipe (Cat. No. VIII-F-11077), but it is so badly broken that it is impossible to get an idea how the eyes, nose, and mouth were represented. There are three other faces of the same type as those in Plate XVI, figures 18 and 20. Many of them are lifelike, although somewhat expressionless. Even the best (Plate XVI, figure 16) is probably not to be considered as a portrait, the only intention having been to produce a face. That in Plate XVI, figure 21, is rather squat; the one in figure 19, in the same plate, is grotesque and suggests that the maker had a sense of humor.¹

Most of them are well modelled. That on the pot rim in Plate IX, figure 26, however, is inferior to that on some faces on Iroquoian pottery from Pennsylvania (*See* Wren, Plate 6, figures 1-5), but equals that on faces on rims from other Iroquoian sites in Ontario and in New York (*See* Beauchamp, 2, Figures 47, 50-53). Other crudely modelled faces are seen on the pipes in Plate XVI, figures 14, 15, and on the little head in Plate XV, figure 31. The modelling of faces on the other pipes, however, compares favourably with that on heads seen on pipes and pottery vessels from the southern states.²

The facial and other features are represented in various ways. The forehead of all the faces except those in Plate XV, figure 31, and Plate XVI, figure 20, is more or less naturally represented. The cheeks are mostly low (Plate XVI, figures 16, 18, 20), only one (Plate XVI, figure 21), showing the high cheeks characteristic of most Indian physiognomies. The ears are only a little more than suggested by lateral expansions of the face, with no attempt to bring out the natural shape or the details (*See* Plate XVI, figures 16, 18, 20, 21).³ In four cases the ears are pierced, probably for the attachment of ornaments.⁴ None has the hairy arches of the eyebrows represented in relief, as on a face from a pipe found in an Onondaga site in Jefferson county, New York (*See* Skinner, 4, Figure 44); in fact, this feature is rarely shown on modelled faces elsewhere. The eyes are represented either by means of oval bosses with a horizontal slit to indicate the eye-balls,⁵ as on a face on a pipe from the site, in the White collection; or by roundish (Plate XVI, figure 14), oval (Plate XV, figure 31), oblong (Plate IX, figure 26, and Plate XVI, figure 18), or lenticular depressions (Plate XVI, figures 16, 21), a few of which are deep and crudely made, apparently with the rough end of a stick (Plate XVI, figure 17); and curved

¹ *See* Boyle, 2, fig. 12, showing a similar face on a pipe from a Tionontati site in Simcoe county.

² Few earthenware pipes from the south bear human faces, but they occur more often on earthenware dishes, especially those from Tennessee (*See* Thruston, Plate VI, two vessels in middle; Plate VIII, second and upper vessels in lower row; and Plate IX, large vessel in middle of lower row).

³ The ears are similarly represented on an earthenware pipe from Louisiana (*See* Moore, 9, figs. 13-15, but they are more realistically treated on southern pottery (*See* Holmes, 2, Plates XXIX-XXXII).

⁴ Pierced ears are also seen on human faces from other Iroquoian sites in Ontario (*See* Boyle, 2, fig. 5, showing one from the Clearville (Neutral) site, Orford tp., Kent co.; 6, fig. 1, and 15, fig. 20, two from Tionontati sites in Nottawasaga tp., Simcoe co.; 7, fig. 29, one from a site in Harvey tp., Peterborough co.; 10, fig. 2, one from the Sealey farm site, Brantford tp., Brant co.; and, 15, fig. 22, one from a Huron site in South Orillia tp., Simcoe co.).

⁵ The eyes are similarly represented on an earthenware pipe from a Huron site near Victoria Harbour, Simcoe co. (*See* Boyle, 8, fig. 12).

finger-nail impressions (Plate XVI, figure 19). In a few cases the borders of the cavity are in low relief to indicate the lids (Plate XVI, figures 16, 21).¹ The noses on most of the faces on pipes, which might be described as roughly triangular as viewed from the front, are mostly broader than in nature and either straight (Plate XVI, figures 18, 21) or slightly retroussé in profile (Plate XVI, figure 20). The crudest representation of this feature consists of a narrow, vertical, rounded ridge (Plate XVI, figure 19). The nose on the face in Plate IX, figure 26, is crude, and it is only a little more than suggested on one of the little heads on the pipe in Plate XVI, figure 14, and the little head (Plate XV, figure 31). Only one has the natural shape of the alæ suggested, although perhaps it was unintentional. This detail of the nose is seldom brought out naturally even in the highly developed plastic art of Mississippi valley and Tennessee,² and on the modern wooden masks of the Iroquois. The nostrils are indicated on five of the faces. The bridge of the nose on the face in Plate XVI, figure 20, bears four, short, transverse grooves which, as mentioned above, may represent tattooed or painted markings. The mouth on all the faces is open and is represented by oblong (Plate XVI, figure 17) or lenticular depressions of various lengths (Plate IX, figure 26, Plate XV, figure 31, and Plate XVI, figures 14, 18, 20, 21), and by a finger-nail impression (Plate XVI, figure 19), the size being in most cases proportionate to that of the face. The borders of a few of the depressions are in low relief to represent the lips, the upper lip in two examples protruding more than the lower (Plate XVI, figure 20). None of the upper lips shows the vertical furrow below the nose, or furrows from the sides of the nose to the corners of the mouth, as on a pipe from an early Huron site in Victoria county (See Boyle, 8, Figure 9). The teeth³ and the tongue are not indicated. The chins are more or less naturally treated; a few are broad and show the natural incurve below the lip (Plate XVI, figures 18, 20); that on the face in Plate XVI, figure 21, however, is retreating and disproportionately small as compared with the face. The raised band across the top of the forehead on the face in Plate XVI, figure 16, may have been intended to represent either the hair or a cap-like head-dress. The significance of the triangular figures above the little heads on the fragment in Plate XVI, figure 15, is uncertain, but they may be ornamental. They are like those on a pipe bowl from Jefferson county, New York, which Skinner (4:154), referring to his Figure 39b, thinks may represent plumed head-dresses. None has horn-like projections like those on human face pipes from Huron sites in Simcoe (See Hunter, 2, Figures 1, 2), York (See Boyle, 5, Figure 11), and Victoria counties (See Boyle, 8, Figure 15; and, 11, Figures 15, 22), the site of Hochelaga (See Dawson, 3, Figure 18), and a Seneca site in New York (See Parker, 4, Figure 6, 5).

The only modelled full-length representations of the human form are two figures, with heads missing, on the side of the pipe bowl in Plate XVI, figure 23, and the little figurine in Plate XV, figure 30. Those on the pipe represent a nude child riding pickaback on a larger nude figure, the legs

¹See Skinner, 4, fig. 44, showing a face with the eyes somewhat similarly treated.

²See Holmes, 2, Plate XXIX, fig. c; Plate XXX; Plate XXXI; and Plate XXXII, figs. a, c, d.

³Teeth are indicated on faces on pipes from other Iroquoian sites in Ontario (See Boyle, 4, fig. 75, showing one from a Huron site in Tay tp., and fig. 77 one from a Tionontati site on lot 12, con. I, Nottawasaga tp., Simcoe co 8, fig. 10, one from lot 5, con. V, and, 11, fig. 17, one from lot 9, con. III, Bexley tp., Victoria co.).

of the latter extending along the side of the stem. The left arm of the large figure lies on the side, with the hand grasping the leg of the child, whereas the right arm appears to have been flexed, the hand resting near the neck, as is shown by the scar where most of it is broken off. The arms of the child grasp the shoulders and the legs clasp the waist of the larger figure. Four impressed lines set off the fingers of the left hand, but the thumb is not distinguished from the fingers in size. The anus of both figures is indicated. The figurine, which is probably the work of a child, has the eyes, nose, and mouth crudely indicated; the head is not separated from the torso by a neck; and the arms are only a little more than suggested. Parts of both legs are missing. The scar on the back of the head suggests that this figure may have been part of another object, perhaps a pot rim as on pottery from New York, although the New York examples are mainly merely in relief (*See* Beauchamp, 2, Figures 41, 45, 101, 241, 245).

What is possibly a conventionalized representation of a headless human form, although it may also represent a mammal or a lizard, is seen on the rim fragment of a pot in Plate VIII, figure 30; only part of it remains.

An engraved, half-length representation of the human form is seen on the side of the long stone object in text Figure 3. The face shows an advance on most of those on pot rims in having all the facial features indicated—the eyes and nose by small, round depressions and the mouth by a short, horizontal incision. The group of diagonal lines at the side of the head may represent hair or a feather head-dress, and the two diagonal lines on the breast may be intended for an arm.

What was probably intended to represent a phallus, carved in antler (*See* Plate XVII, figure 24), may be considered here. The unsmoothed cuts, and its rough appearance generally, suggest that it is unfinished. It is the only carving of the kind from an Iroquoian site of which the writer has any record, and similar carvings seem to be rarely found at sites of other cultures.¹

The animal forms consist of a possible mammal form, birds, a turtle, snakes, a fish, and what seem to be heads of frogs.

What may be intended to represent the head of a mammal is crudely modelled on the side of a pot rim (Cat. No. VIII-F-9675).

Most of the bird forms consist of heads only. The broken head in Plate XVI, figure 8, with the eyes represented by deep, conical depressions and the mouth indicated by an impressed line, has the hooked beak of a raptorial bird and may represent the head of either an eagle or a hawk. Figures 9 and 10, in the same plate, show two broken heads which are probably also those of birds.² The one in figure 9 has the nostrils indicated and the eyes consist of large, conical depressions; the eyes of the other head are represented by circular depressions, apparently made by stamping with the end of a hollow bone. The most lifelike representations are those in Plate XVI, figures 11 to 13; all probably representing horned owls. The

¹Objects of this kind, modelled in earthenware, have been found at a Seneca site in Ontario co., N.Y. (*See* Parker, 6: 197), and at a site in eastern Nebraska (*See* Gilder, p. 251). According to Thruston (p. 110), similar objects are "sometimes found separately carved or moulded with much labour and skill in stone and clay," in Tennessee, and they have been found in Georgia, and adjacent states (*See also* Jones (C.C.), p. 439, and Jones (J.), p. 135).

²Similarly shaped bird heads occur on earthenware pipes from other Iroquoian sites in Ontario and New York (*See* Boyle, 1, fig. 12, showing one from a post-European site in Beverly tp., Wentworth co., and, 3, fig. 11, one from a Tionontati site in Nottawasaga tp., Simcoe co., Ont.; Parker, 6, fig. 37, one from a post-European Seneca site in Erie co., and Skinner, 4, fig. 18 b, one from a Cayuga site in Cayuga co., N.Y. Holmes, 2, Plate CLV, fig. d, shows another, probably also from New York).

head seen in figure 11 is badly broken, but enough of it remains to show that it was well modelled. It seems abnormally wide as compared with the length, and this and the shape of the horns or ear tufts give the face a reniform outline. The eyes are formed by depressions of two different sizes; the smaller one probably representing the pupil. The mouth is represented by a shallow groove. There is a more or less rectangular depression above the beak and one in each horn or ear tuft, and below, on each side of the face, are two other, nearly vertical depressions, graduated in size, which, with those in the horns, radiate slightly from each eye. A badly broken owl head, apparently of the same type as the one just described, has the eyes represented by deep, round cavities with a rounded prominence in the bottom, made by pressing into the clay an object with a hollow in the end. Surrounding each cavity is a large, impressed circle, which may have been intended to represent the eye disks. Oblique, linear depressions on both sides of the beak represent the mouth. The head in figure 12, with part of the beak and one of the horns missing, is the most naturally represented bird head found here. There is a hollow in the centre of the remaining horn. The eyes are represented by deep pits, flat at the bottom, and with rounded, vertical sides; radiating oval depressions, surrounding these cavities, represent the eye disks.¹ The beak is hooked; shallow oval depressions indicate the nostrils, and curved impressions the mouth; the fine lines on top and part of the way down the sides of the beak probably represent the nasal tufts.² The face, with part of the beak missing, in figure 13, differs from the others described in having the eyes represented by more or less round, saucer-shaped depressions with a low, rounded eminence in the bottom;³ in having the mouth open; and in having round instead of rectangular depressions around the face. The depressions in the horns are ovoid and conform more or less to the outline of the horns.

There was probably also a bird head on another earthenware pipe (Cat. No. VIII-F-13137), and there may have been a tail on the broken edge on the opposite side of the bowl.⁴

A legless bird form, lacking the head and one of the wings, is seen on the bowl of the pipe in Plate XVI, figure 7. That it had a long beak, or perhaps wattles, is suggested by a long scar on the breast. The back is ridged, and on it, judging from what remains, there seems to have been a triangular space, bounded by deep grooves on all sides, half of which sloped to the right and the other to the left. At the smaller end of this space are four, short, transverse impressions. The feathers of the remaining wing, which is modelled in relief, are represented by impressed diagonal lines. The short tail suggests that this form represents an owl.

The diagonal lines on the sides, and the fact that there is a luting scar on the front of the pipe in Plate XVI, figure 6, suggest that there was part of a bird form represented on this pipe, the diagonal lines probably indicating the wings.

¹See Smith, 2, Pl. LXVIII, fig. 5, showing an earthenware pipe from a site at lake Medad, Halton co., with the eye disks somewhat similarly represented.

²The nasal tufts are similarly indicated on bird heads on earthenware pipes from sites in New York (See Beauchamp, 2, fig. 140. Holmes, 2, Pl. CLVII, first pipe in third row, and Skinner, 4, fig. 18b) and on stone pipes from mounds of the Mississippi valley (See Squier and Davis, figs. 169, 177, 179, and 181).

³See Boyle, 4, fig. 71, showing owl head on an earthenware pipe from a Tionontati site in Nottawasaga tp., Simcoe co., with the eyes similarly shown.

⁴Compare with the bird form on the earthenware pipe seen in Smith, 2, Pl. LXVIII, fig. 2.

There may have been either a bird or mammal head on the fragment of the stemless stone pipe seen in Plate XV, figure 47. The diagonal line with the claw-like end, on one of the flat sides of this pipe, if it was not an accidental scratch, may have represented a leg. The low, flattened, transverse ridge below the stem hole corresponds to the projection representing the feet on stone bird pipes from elsewhere in Ontario (See Laidlaw, Figures 27-29, 32, 33).

There is what seems to be part of a turtle form from a broken earthenware pipe (Cat. No. VIII-F-13131). The head, all but one leg, the tail, and part of the carapace are missing. The remaining front foot is shown by a low, oblong projection, with the digits indicated by three short grooves. The carapace is covered with closely parallel, impressed diagonal lines. That it overhung the feet, as in nature, is suggested by a groove between it and the feet.¹

It is surprising that so few representations of turtles were found here and also elsewhere at Iroquoian sites in Ontario and New York, especially when we consider the important place the turtle holds in the clan system of the Iroquois.

The snake forms are seen on the fragments of earthenware pipes in Plate XVI, figures 1-3. The one in figure 2 has part of the head broken off and all but three of the coils are missing; the eyes, however, which are indicated by conical depressions, remain. The body tapers toward the bottom and the coils are separated from each other by deep, smooth grooves. The head, which projected above the edge of the pipe bowl as in other snake pipes from Iroquoian sites (See Boyle, 5, Figure 6), is not expanded or abruptly widened at the neck as in poisonous snakes (See Holmes, 2, Plate CLV, figure *a*) with which the people here seem to have been acquainted. That the rattlesnake was known is shown by the piece of a pipe in figure 3, which has what is evidently intended for the rattle at the end of the tail. There are three other fragments of snake forms; the one illustrated in figure 1 shows two snakes coiled around the bowl, with the tails straightened out along the stem. The other two, both fragments of stems (one of which is Cat. No. VIII-F-13792 and the other in the White collection), also bear two snake tails, both of which end rather abruptly. Two snake forms are seen on the earthenware pipe (also in the White collection) illustrated in Plate XVI, figure 25 *a*, *b*; the remains of one of the eyes can be seen on the head in *b*.

The two heads in Plate XVI, figures 9 and 10, referred to above as probably being those of birds, may also have been intended to represent snake heads; Boyle (1:23) considered a similar head as probably representing that of a snake.

All of the snake forms have the scales represented either by a row of X-like figures or by diagonal cross-hatching, in which respect they are like one from Lanark county (See Boyle, 5, Figure 6), and another from an Iroquois site near Baldwinsville, New York (See Beauchamp, 2, Figure 166). The rattles on the specimen in figure 3 are marked with a single, impressed line across the longer diameter of the oval, with six short lines across it at right angles.

¹Compare this with another turtle form on an earthenware pipe from an Iroquois site in New York, in Parker, 6, Plate 53, fig. 9.

Snake forms are not rare on earthenware pipes from Iroquoian sites in Ontario, and New York, a few of them differing from the Roebuck specimens in having the tail coiled around both bowl and stem,¹ and others having the scales represented by roundish depressions instead of cross-hatching (See author, 9, Plate XIII, figure 14).

The snout-like, pointed, angular lips, with circles for eyes, seen in Plate X, figures 18 and 20, may have been intended to represent the heads of frogs, which are seldom depicted on pottery even of other cultures (Compare with Holmes, 2, Plate LXXIII, figures *a* and *c*, showing two examples from Florida).

The only fish form found here is seen in Plate XVI, figure 5 *a*, *b*. The tip of the upper and lower jaws and part of the top of the head are broken off, and the broken part of the upper jaw has been rubbed smooth. The eyes are shown on top of the head by two conical depressions. The two curved lines on the sides of the head probably represent the pre-maxillaries and maxillaries with their connecting skin, and the gill cover is well shown. There are twelve, short, transverse notches on the back, which probably represent the dorsal fin; the raised portion at the end may be intended for the soft part of this fin, although it may also have been finished off abruptly to allow the mouthpiece of the pipe to be made. The pectoral fins are not represented, but the ventral fins are shown by rounded projections, and between them is a rounded prominence which was probably intended to represent the anal fin. The scales are indicated by diagonal cross-hatching. On the ventral side of the fish (See figure *b*), the wrinkles in the skin of the jugular region are shown by six, short, transverse lines, and behind them the mucous cavities are indicated by three rows of small, semicircular depressions in pairs, the two outer rows consisting of five and six pairs of impressions and the middle row of two. The large, central depression probably represents the anus, which should have been placed behind the ventral fins. The fish represented is probably one of the sun-fish family.

The two raised forms of different widths (there were probably two others), covered with cross-hatching, seen on the fragment of an earthenware pipe in Plate XVI, figure 4, may also have represented fish.

Although a few specimens carved in stone have been found,² fish forms are seldom modelled on earthenware pipes, the only other modelled examples known to the writer being a very fragmentary specimen from an early Huron site on lot 60, front range, Somerville township, Victoria county, Ontario, and a whole specimen from near Chattanooga, Tennessee (See Rau, Figure 349).

Ornamentation in relief, like that on the pot rim fragments in Plate V, figures 22, 23, 25-27, may, as Dawson thinks (3:90), represent ears of corn, the rows of transverse linear impressions being intended to represent the kernels. The grooves between the ridges are wide and deep and in some cases filled with parallel, vertical lines.

¹See Boyle, 4, fig. 70, showing one from a site on lots 19 and 20, Gull River range, Bexley tp., Victoria co., Ont., and Beauchamp, 2, fig. 162, one from a site near West Bloomfield, New York.

²See West, fig. 166, showing one from Wisconsin, and Moorehead, vol. II, fig. 480, one from the Hopewell group of earthworks in Ohio.

This is an exclusively Iroquoian design and is found at sites of the same culture as Roebuck in Glengarry county, at the site of Hochelaga (*See Dawson, 1, Figure 10, and 3, Figure 22f*), at an early Huron site in Victoria county, and in New York (*See Beauchamp, 2, Figure 73*).

The earthenware pipe, probably from this site, seen in Plate XVI, figure 22, resembles a corn-cob and it is probable that the incised reticulate design was intended to show the kernels.

Modelled plant representations are scarce at Iroquoian sites, the writer knowing of only two other examples, both of them on pipes from Huron sites in Simcoe county (*See Boyle, 13, Figure 14, and Hunter, 2, Figure 8*).

The incised zigzag on one side of the stone object in text Figure 3, and on two bone objects, one of which is seen in Plate XIV, figure 31, may have been intended to represent lightning.

It is hard to say what the X-like figures on the front of the stone pipe (Plate XV, figure 47), and on the clay concretion in Plate XV, figure 18, signified. They differ from other crosses on artifacts from Iroquois sites in Ontario in being more like a St. Andrew's cross than a Greek cross (*See Boyle, 9, Figures 5, 9*).

The representation of pot forms on the bowls of earthenware pipes may be considered here. They have the overhanging collar characteristic of most Iroquoian pots, and two even have angular lips like those on some of the rims.

METHOD OF BURIAL

The mortuary customs of the people of this site differed from those of their Huron kindred, the dead being buried in the ground and not exposed on scaffolds or deposited in communal graves; at least no evidence of the latter custom was discovered here or at nearby sites of the same culture.

Human remains had been discovered in past years, so near the surface that they were brought up by the plough. The late William Hutton is said to have found a human skeleton, accompanied by the remains of a dog, while digging a pit in that part of the site near the western edge of the Kelso portion. Some years ago Mr. White, while digging a post hole south of his barn, and north of refuse deposit 18, came upon a skeleton; and a few years later pigs rooted out several skulls from beneath the barn. While making the excavations for Mr. Starr's barn a skeleton was found that had been buried full length. A portion of a skeleton (No. 84) was unearthed in 1924 by Mr. Henry, the present owner of the Starr farm, about 1 foot west of the line fence between the White and Henry farms, and about 8 feet south of the barn. The writer secured other parts of this skeleton and those of another (No. 85) buried about 2 feet farther south.

The distribution of the graves was not governed by the character of the various parts of the site, as graves could be easily dug anywhere on the sandy hill; eighty-three burials, as seen on Map 1599, were in practically all parts of the area excavated, in a few cases even at the edge of the swamp at the foot of the hill. Most of them were close to each other in groups and a few were isolated. There were forty-nine skeletons along the bank of the south side of the site, thirty-nine of them within or near the area covered by refuse deposit 1, as shown on Map 1600; five were in

or near refuse deposit 2; two in deposit 11; two in deposit 15; one in deposit 4; one in 5; one in 13; three in 19; and the rest were scattered. Most of the graves were inside the palisade. Forty-six were in areas covered with refuse.¹ Three of these (Nos. 1, 2, and 32) were in the clean yellow sand with ashes and refuse over them, but with nothing to show whether they had been buried in the top of the sand and the refuse accumulated over them, or if they had been buried in a hole dug into the sand through the refuse, after all or only part of it had accumulated. Two (Nos. 18 and 50) were in shallow excavations in the sand with refuse filling the holes, showing that they had been put in dug holes rather than on top of the sand, and that refuse instead of clean sand was present to cover them; but fifty-two, or more than half of all the skeletons found, were more or less deeply in the sand, with no refuse in the holes up to the level of the surrounding refuse, as if buried before refuse was present. In many cases there was no refuse above the sand filling of the graves, although any little that was over them may have become obscured by cultivation. Skeleton No. 27 was lying on a bed of ashes with ashes and refuse over it, and judging from its position near the edge of the dump at the bottom of the slope, was probably thrown down the hillside without any regard as to the position in which it lay. Skeleton No. 68 lay under a small patch of refuse and No. 58 was buried in a small pocket of black refuse. Some broken animal bones and carbonized kernels of corn were found on and mixed with the bones of skeleton No. 1, and fragments of pottery and animal bones were found among the bones of No. 2. Pottery fragments were lying on the skulls of Nos. 8 and 26, and pieces of charred corn-cobs and charcoal were found inside the skulls of Nos. 25 and 33.

The soil above skeleton No. 59 was burnt to a brick-red and the upper parts of the bones were scorched. This may have been done recently when burning stumps.

What may be the remains of pieces of bark or a film of lime adhered to one of the tibiae and some of the bones of the upper part of skeleton No. 49.

Skeleton No. 29 had a roughly broken piece of limestone, about 10 inches in diameter and 4 inches thick, with a smaller stone on top of it, at the back, and a weathered limestone slab, of about the same size as the larger piece, lying on the tibia. No. 59 also had a large stone lying at the back, and there were a number of smaller, burnt stones along the back of skeleton No. 56. A few small pieces of granite were lying on skeleton No. 52 and the skull lay on a slanting granite slab.

The depths of the graves varied from 9 to 46 inches, as shown in detail in the accompanying table.

Three double burials were found in refuse deposit 1 (See Map 1600), two of the groups being of children (Nos. 3 and 4, and Nos. 6 and 7), and the third was of women (Nos. 8 and 9, See Plate XIX, figure 3). The heads of Nos. 3 and 4 faced each other, and those of each of the other double burials were in opposite directions, that of No. 6 of one burial being northwest, whereas that of No. 7 was southeast, that of No. 8 was northeast, of No. 9 southwest. There were two triple burials, Nos. 71 to 73 and 76 to 78 (See Plate XIX, figure 4). Nos. 71 to 73 were badly dis-

¹According to Dawson (3:73, 79) the graves at Hochelaga were also covered with refuse.

turbed. Both arms of No. 71 extended toward the west; legs were missing. No. 72 lay west of No. 71. The skull apparently was displaced and the upper portion of vertebral column, scapulæ, clavicles, arm bones, distal half of one femur, tibiæ, and foot bones were missing. The bones of the upper portion of No. 73 also were missing; the femora lay with the proximal ends to the west, and the feet lay on the neck of No. 71. This skeleton possibly was buried full length. It may be the one found by Mr. White while digging a post hole, as a fence post stands where the upper part of the skeleton was expected to be found. A frontal bone and other parts of a skull, possibly of this skeleton, were found nearby, but nearer the surface.

The bones of an infant (No. 80) lay near the right knee of the skeleton of a young woman (No. 79), possibly its mother.

The burials were not in regular rows, although skeletons Nos. 1 to 13 were in a nearly straight row across the bottom of the hill, and at nearly regular intervals.

No attention seems to have been paid to the orientation of the graves, for the skeletons were lying in different directions (See Maps 1599 and 1600, and table).

A few of the bodies had been buried lying on their backs (Nos. 5, 8, 9, 16, 26, 34, 67, 71, 75, and 76), but most of them (See Table) were lying on either the right or left side. Those buried in a flexed position lying on their backs probably had the knees elevated at the time of burial, but when found the leg bones of Nos. 5 and 34 were lying on top of the other bones; those of No. 9 were lying flexed at the left side and those of Nos. 8, 16, and 26 were on the right side.

Six were buried lying on the abdomen (Nos. 2, 28, 59, 66, 72, and 77). No. 2 was buried carelessly with the legs flexed at a right angle to the right.

Most of the skulls lay on one side, in many cases bent forward, but that of No. 50 was bent backward. Six were placed with face up, eight had the face down, four were inverted, and two were vertical.

The arms of many of the skeletons were sharply flexed, one arm more closely than the other in some cases. The elbows of Nos. 53 and 60 rested on the knees. In a few cases one arm was flexed and the other lay either across the chest (Nos. 16, 26, 42, 55, and 67) or along one side (No. 61) with the hands on the hip (No. 14), or across the legs (No. 51), or near the feet (No. 56), or below the legs (No. 66). The right arm of skeleton No. 28 (See Plate XIX, figure 1) was loosely flexed across the chest and the left was extended, with the hand between the legs. Three other skeletons (Nos. 24, 31, and 49) had the arms crossed on the chest; the right hand of No. 49 rested on the shoulder and the left hand extended beyond the right humerus. The right arm of skeleton No. 2 lay akimbo at the side and the left across the chest, with the fingers under the radius of the right arm. The position of the hands of other skeletons depended on the amount of flexing of the arms, but they were in most cases on or near the face or the chest, some of them with the fingers extended. In one case one hand was over the shoulder (No. 16), in another near the knees (No. 64), in another on the forehead (No. 59), and in two others (Nos. 76 and 77) on the side of the head or neck. In two cases (Nos. 7 and 62) both hands had been placed with palms together on one side of the head.

The legs of all the skeletons found by us were more or less flexed; in some cases loosely, in others sharply; often with the heels brought up close to the pelvis and the knees near the chest. Five had the legs flexed at right angles to the body.

The flexing was probably not done to save digging a larger grave, as even among people who practised scaffold burial the corpse was flexed before being placed on the scaffold (*See Charlevoix, VI, 108*). Possibly the Roebuck site people held the same opinion as those mentioned by Fathers Jouvency¹ and Biard.²

The fact that all but nine of the skeletons are those of women, children, and adolescents suggests that the younger men or warriors were buried away from the site while on the warpath, or that there is another burial place somewhere, perhaps for males of the warrior class, in the neighbourhood of the site. There is only one skeleton of a young man of war age (No. 75) and his death seems to have been due to a growth on the back part of the head. Some of the skeletons are those of extremely aged individuals, including two males (Nos. 35 and 36) and two females (Nos. 14 and 27); thirty-three, or about 30 per cent, of the skeletons are those of infants and children.

The skulls of twenty-three skeletons were crushed or broken, probably all of them posthumously, some recently by the plough, a few owing to compressure by earth; one of the latter was abnormally elongated.

Some of the skeletons have one or more bones missing (Nos. 1, 8, 9, 18, 23, 63, 65, 74, and 75). In one case only the skull remained (No. 63), and in two others (Nos. 23 and 75) only the skulls and a few other bones. Some of these were probably ploughed out and scattered. Others had been broken and scattered by Mr. White when digging post holes. In a few cases the bones were disturbed by the plough, so that their exact position could not be ascertained. The bones of the arms and legs of one of these disturbed burials (No. 68) were in a heap, with pieces of the skull lying on one side.

Some of the bones, especially that of skeleton No. 79, were in an excellent state of preservation. Parts of others (Nos. 13, 14, 15, 24, 37, 38, 43, 44, 46, 74, 82, 83, and 84) were decayed. Most of the bones were fragile.

A few of the bones showed healed fractures; several are pathological, including a deformed upper end of a femur (Skeleton No. 76), and there are a few anchylosed vertebræ and footbones.

Artifacts were not found definitely belonging with the burials except with No. 21 (Plate XIX, figure 2), which had the beautifully formed pottery vessel illustrated in Plate XI between the body and the right femur. The pot was upright and filled with discoloured sand. It was broken when found; some of the pieces were 2 inches below the bottom, others missing. A bone awl, found at the base of the skull of skeleton No. 40, and charcoal, charred corn, and pottery fragments found with other skeletons, apparently did not belong with the burials.³ The bleached skull of a rac-

¹"The corpse, wrapped in beaver skins, and placed upon a bier made of bark and rushes, with his limbs bent and pressed tightly against his body in order that, as they say, he may be committed to the earth in the same position in which he once lay in his mother's womb (*Jesuit Relations, I, 263-265*).

²Biard (*Relation, 1616, III, p. 131*), speaking of the burial of an Indian, says: "Not lengthwise, but with the knees against the stomach and the head on the knees, as we are in our mother's womb" *See also, Relation, 1657-58, XLIV, p. 309*.

³Dawson (I: 431) noted a similar absence of artifacts from the graves at the site of Hochelaga; no artifacts, also, are found with human remains at Onondaga sites in Jefferson co., N. Y. (*See Parker, 6: 327*).

coon, with all the teeth missing, was buried near or with skeleton No. 66. The upper jaw of an adult, portions of the skull of a child, and the back part of the skull of a deer were found about 1 foot to the east and on the same level as skeleton No. 81.

The post holes surrounding skeleton No. 28 (See Map 1600) suggest the possibility that some of the graves were covered with grave houses or were surrounded with wooden palisades. We know from the Jesuit Relations of 1656-1657 (XLIH, page 279) that palisades were sometimes erected around graves. Van Curler (Wilson, page 92) and Megalopensis (page 157), at an earlier date, mention similar structures that enclosed Oneida and Mohawk graves, and the first-mentioned writer adds that the palisades "were painted with red, and white, and black paint."

Details of Burials

No.	Found in deposit No.	Depth in inches			Dimensions of graves in inches	Orientation			Age	Sex
		In sand	In refuse	Total depth		Head	Face	Side		
1 ¹	1	.....	.....	18	16.....	East....	South...	Left....	Child.....	?
2	1	.....	.....	18	36 x 20....	SE.....	Down..	Front...	Adult.....	Female
3	1	.....	.....	19	24 x 21....	East....	North?..	Right...	Child.....	?
4	1	.....	.....	19	.....	East....	South...	Left....	Child.....	?
5	1	.....	.....	19	22 x 11....	East....	Up.....	Back...	Child.....	?
6	1	.....	.....	19	27 x 15....	NW.....	SW.....	Right...	Child.....	?
7	1	.....	.....	20	.....	SE.....	NE.....	Right...	Child.....	?
8	1	8	12	20	.....	NE.....	Up.....	Back...	Adult.....	Female
9	1	.....	.....	20	40 x 31....	SW.....	NW.....	Back...	Adult.....	Female
10	1	22	12	34	17 x 9....	East....	North..	Right...	Child.....	?
11	1	23	12	35	33 x 18....	East....	North..	Right...	Adult.....	Female
12	1	22	11	33	.....	West....	South...	Right...	Adolescent	?
13	1	.....	.....	33	36 x 18....	West....	South...	Right...	Adult.....	Female
14	1	.....	.....	30	38 x 22....	SW.....	SE.....	Right...	Aged adult	Female
15	1	25	8	33	36 x 24....	NE.....	NW.....	Right...	Adult.....	Female
16	1	15	11	26	45 x 24....	NE.....	SE.....	Back...	Adolescent	Female
17	1	28	9	37	34 x 16....	NW.....	SW.....	Right...	Adult.....	Male
18	1	22	8	30	28 x 12....	North..	East....	Left....	Child.....	?
19	1	.....	.....	24	16 x 8....	NE.....	SE.....	Left....	Child.....	?
20	1	.....	.....	24	21 x 12....	North..	Vertical	Right...	Child.....	?
21	1	10	8	18	34 x 14....	SW.....	NW.....	Left....	Adult.....	Female ?
22	1	.....	.....	29	42 x 21....	South..	East....	Right...	Adult.....	Male ?
23	1	.....	.....	23	.....	?	In-verted	?	Child.....	?
24	2	19	27	46	30 x 15....	SW.....	SE.....	Right...	Adult.....	Female
25	2	14	20	34	22 x 12....	NW.....	NE.....	Left....	Child.....	?
26	2	14	15	29	35 x 24....	North..	West....	Back...	Adult.....	Female
27	15	.....	.....	26	47 x 15....	SE.....	SW.....	Left....	Adult.....	Female
28	1	20	7	27	41 x 16....	SW.....	SE.....	Front...	Adult.....	Female
29	1	.....	.....	10	24 x 10....	East....	South...	Left....	Adolescent	Female ?
30	1	.....	.....	12	36 x 17....	NE.....	SE.....	Left....	Adult.....	Female
31	1	.....	.....	18	35 x 19....	East....	South...	Left....	Adult.....	Female
32	15	.....	.....	18	14 x 8....	SE.....	NW?...	Right?	Child.....	?
33	1	.....	.....	24	20 x 8....	West....	North..	Left....	Child.....	?
34	13	.....	.....	9	10 x 5....	West....	?	Back...	Child.....	?
35	1	.....	.....	19	32 x 18....	East....	North..	Right...	Adult.....	Male
36	1	.....	.....	29	34 x 10....	West....	North..	Left....	Adult.....	Male
37	1	.....	.....	32	37 x ?....	North..	West....	Right...	Adult.....	Female

¹Skeletons are numbered in the order of their discovery and not according to their relative proximity to one another.

Details of Burials (Continued)

No.	Found in deposit No.	Depth in inches			Dimen- sions of graves in inches	Orientation			Age	Sex
		In sand	In refuse	Total depth		Head	Face	Side		
38	1	.....	.....	20	28 x ?.....	SE.....	NE.....	Right..	Adult.....	Female ?
39	1	.....	.....	36	32 x 16....	North...	West...	Right..	Adult.....	Female ?
40	1	.....	.....	?	28 x 12....	West...	South...	Right..	Adult.....	Female
41	1	.....	.....	20	18 x 10....	East....	Down..	Left....	Child.....	?
42	1	.....	.....	18	32 x 18....	NE.....	SE.....	Left....	Adult.....	Female
43	1	.....	.....	11	12 x ?.....	SE.....	?	Right?..	Child.....	?
44	1	.....	.....	30	28 x 15....	SW.....	NW...	Left....	Adult.....	Male
45	1	.....	.....	24	32 x 15....	North...	Down..	Right..	Adult.....	Female ?
46	2	.....	.....	20	19 x ?.....	South...	East....	Right..	Infant.....	?
47	2	.....	.....	?	12 x ?.....	NW.....	Up.....	?.....	Infant.....	?
48	11	.....	.....	9	12 x ?.....	East....	In- verted	?	Child.....	?
49	4	6	18	24	28 x 22....	NE.....	NW.....	Right..	Adult.....	Female
50	11	.....	.....	33	36 x 22....	SE.....	SW.....	Left....	Adult.....	Male
51	5	.....	.....	10	36 x 21....	SW.....	SE.....	Right..	Adult.....	Male
52	.....	.....	.....	16	.....	West....	North..	Left....	Child.....	?
53	19	.....	.....	22	35 x 18....	SW.....	SE.....	Right..	Adult.....	Female ?
54	19	.....	.....	6	24 x 12....	SW.....	NW.....	Left....	Child.....	Female ?
55	19	.....	.....	10	21 x 12....	SW.....	SE.....	Right..	Adult.....	?
56	.....	.....	.....	8	20 x 10....	SW.....	SE.....	Right..	Child.....	?
57	.....	.....	.....	12	32 x 18....	North...	West....	Right..	Adult.....	Male
58	.....	.....	.....	6	12 x 6....	?.....	?.....	?.....	Infant.....	?
59	.....	.....	.....	8	35 x 9....	North...	Down..	Front...	Adult.....	?
60	.....	.....	.....	8	32 x 20....	NE.....	Down...	Right..	Adult.....	?
61	.....	.....	.....	8	30 x 18....	SE.....	Down- ward	Left....	Adult.....	?
62	.....	.....	.....	6	38 x 14....	South...	Down..	Right..	Adult.....	?
63	.....	.....	.....	6	.....	South...	West ?..	Left ?..	Adult.....	?
64	.....	.....	.....	6	38 x 16....	North...	Down..	Left....	Adult.....	?
65	.....	.....	.....	.....	.....	?.....	?.....	?.....	Adult.....	?
66	.....	.....	.....	7	20 x 7....	North...	East....	Front...	Child.....	?
67	.....	.....	.....	7	15 x 7....	SW.....	North	Back...	Child.....	?
68	.....	.....	.....	6	5 x 6....	?	?.....	?.....	Child.....	?
69	.....	.....	.....	?	.....	North...	?.....	?.....	Infant.....	?
70	.....	.....	.....	?	.....	?.....	?.....	?.....	Infant.....	?
71	.....	.....	.....	12	.....	NW.....	NW. In- verted	Back...	Adult.....	?
72	.....	.....	.....	12	.....	NE.....	NE.	Front...	Adult.....	?
73	.....	.....	.....	12	.....	?.....	?.....	?.....	Adult.....	?
74	.....	.....	.....	?	.....	South...	Up.....	Back ?..	Child.....	?
75	.....	.....	.....	12?	.....	North...	Up.....	Back...	Adult.....	Male
76	.....	12	24	36	46 x 36....	West....	Up.....	Back...	Adult.....	Female
77	.....	.....	.....	36	.....	West....	North..	Front...	Adult.....	Female ?
78	.....	.....	.....	36	38 x 14....	East....	South...	Left....	Adult.....	Female
79	.....	20	12	32	32 x 20....	SW.....	SE.....	Right..	Adult.....	Female
80	.....	.....	.....	32	9 x 4....	NW.....	?.....	?.....	Infant.....	?
81	.....	12	12	24	16 x 8....	SE.....	NE.....	Right..	Child.....	?
82	.....	.....	.....	10	30 x 10....	South...	West....	Left....	Adoles- cent ?	?
83	.....	.....	.....	10	16 x 7....	NE.....	SE.....	Left....	Child.....	?
84	.....	.....	.....	32	36 x 18....	West....	South...	Right..	Adult.....	?
85	.....	.....	.....	32?	.....	?.....	?.....	?.....	Adult.....	?

SCATTERED HUMAN BONES

Scattered human bones were found in nearly every refuse heap and in the muck surrounding the spring, but they were most numerous in deposits Nos. 1, 4, and especially in No. 15. Some of them, however, may be remnants of skeletons disturbed by ploughing. The bones most commonly found were, in order of abundance, fragments of skulls, whole and broken lower jaws, tibiæ, femora, humeri, vertebræ, radii, fibulæ, ulnæ, scapulæ, metacarpals, and metatarsals. The large numbers of pieces of crania may be due to the fact that skulls are easily broken, or that the brain was desired, some of the Iroquois being known to break open the skull of victims to extract the brains (*See Jesuit Relations of 1642, XXII, 255*). A few, also, may have been broken to get pieces suitable for manufacture into gorgets like those in Plate XV, figures 32 and 33. Pieces of skull, blackened and scorched by fire, were found in several of the refuse deposits. Lower jaws were common, four being found in deposit No. 4 lying on top of the sand beneath the refuse, two of them together. More than half of these jaws have the condyles broken off; some show marks of hacking near the constricted portion, and one has the apex of the coronoids broken off; all of which is probably due to the method of detaching the jaws. A broken jaw found in deposit 2, and two right halves embedded in ashes in deposit 15, were scorched. The ends of most of the humeri and radii were gone and some have marks of hacking at the broken ends, probably to assist in breaking the bone. Some of the ulnæ were broken. All the femora were broken; one from deposit 15, with the shaft broken near the middle, showed marks of hacking on the side of the fractured end, and several other pieces were burnt. About two-thirds of the tibiæ have both extremities broken off and two are burnt at these ends. A right tibia from deposit 15 has an oblong hole broken into the internal surface of the bone, about 3 inches above the internal malleolus, apparently caused by a wound, but without subsequent reparative growth. One tibia was found in a post hole in deposit 4, about 18 inches below the surface. All the fibulæ are broken and some were hacked near the broken ends. A metatarsal bone shows marks of cutting, probably made by the knife used in removing the flesh.

This large number of scattered, single bones may have been of the people of the site, but it is more likely that most of them are the bones of enemies, who had been roasted and eaten. Most of the bones are those of young and middle-aged individuals, in two instances those of women, in one or two of children, but all others of men. Many of these bones are better preserved than those in graves, which is probably due to boiling or roasting. The breaking and hacking of the bones likewise suggest cannibalism, a practice that was not rare among the Iroquois, as stated in the note on page 76 above. The burnt bones may even be those of prisoners burnt at the stake.

IDENTITY OF THE INHABITANTS

The archæological evidence indicates that the inhabitants of this site belonged to the Iroquoian stock.¹ The artifacts, especially the pottery and the pipes, are in many respects similar to those from the site of Hochelaga and from sites in Jefferson county, New York; the former regarded as having been occupied by Mohawk² and the latter by Onondaga.³ Both tribes are believed to have entered New York from the north; the Onondaga claiming that they came along the St. Lawrence (Beauchamp, 5:134, 137), and the Mohawk that they entered by way of lake Champlain (Beauchamp, 5:135). The Oneida, according to Beauchamp (5:147), "came from the same direction as the Mohawk," and their "earlier homes seem to have been on either side of the St. Lawrence, in the vicinity of the Oswegatchie river," which is about 8 miles south of Roebuck.

Considering that the Roebuck site culture is like that represented at both Mohawk and Onondaga sites, it is possible that the Grenville group of sites was occupied before the Mohawk, Oneida, and Onondaga became separated into the present different tribes.

DISTRIBUTION OF SITES OF THE SAME CULTURE

(Editor's Note: This portion of the report has been paraphrased to eliminate detailed site locations in the interests of their conservation.)

There are six other village sites in Grenville county of the same culture as the Roebuck site. One is in Augusta tp., and five are in Edwardsburgh, the township adjoining Augusta to the east. Three are extensive like the Roebuck site, and so far as can be judged by surface indications, about as rich in aboriginal remains.

Other village sites, also of the same culture, were located by the author in 1914 in the St. Lawrence Valley for some distance above and below Grenville county: one in North Marysburgh tp., Prince Edward co.; one in Sidney tp., Hastings co.; one in Osnabruck tp., Stormont co.; and one in Charlottenburgh tp., Glengarry co., Ontario. The sites of the same culture in Quebec include that of Hochelaga, in the city of Montreal; a site near Lanoraie, Berthier county, about 40 miles east of Montreal; one in Eardley township, Hull county, about 30 miles northwest of Ottawa; and one near St. Regis, Huntingdon county. Material from Jefferson county, New York, described and illustrated by Beauchamp (2 and 3:passim) and Skinner (4:121-171, and Plates XXI-XXXVII), and from Vermont (Perkins, 3), indicates the presence of sites of the same culture there.

¹Readers not familiar with archæological methods may wonder why the remains from this site are classed as Iroquoian. It is possible to learn this by comparing the artifacts from a site of unknown origin with those from historic sites known to have been occupied by an Iroquoian people. Thus, we have definite historical evidence that Simcoe county, Ontario, was inhabited by Hurons, a tribe of the Iroquoian family, who lived there for at least forty years after they came into contact with Europeans. Although glass beads, brass kettles, and iron axes of European origin are found on many of these Huron sites, many articles of native manufacture, especially pottery, are also found, and these constitute the chief criteria for the identification of prehistoric sites of the same people in the same area, or contiguous areas. The pottery, pipes, and some other artifacts from the Roebuck site being similar to those from sites known to have been inhabited by Hurons in historical times, are, therefore, easily identified as of Iroquoian origin.

²See Lighthall, 1, and Beauchamp, 6:110; Skinner (4: 24-25), on the other hand, seems to have considered the inhabitants Onondaga.

³See Skinner, loc. cit., and Harrington, 5:339.

The group of village sites in Grenville county may have been contemporaneous, with little or no difference in culture.¹ Beauchamp says the Onondaga "had generally one large and small village at a time, and this was the case with the Oneida," and that "the Mohawk commenced with two, but soon had three or four" (1:77). Perhaps, too, they were occupied successively, one village after another being abandoned for a new and more desirable location, as was the practice of the Iroquois. The Huron and Neutral are known to have removed their villages every five, ten, fifteen, or twenty years, from one to three or more leagues, when the land became exhausted by cultivation. The New York Iroquois removed their villages "every ten or twelve years" (Beauchamp, 2:87).

SUMMARY AND CONCLUSION

The culture of the Roebuck site may here be briefly characterized. The people subsisted on vegetable foods derived from both wild and cultivated plants (the latter including corn, beans, sunflowers, and squashes) and on the flesh of wild animals. The flesh of dogs and even human beings appears to have been eaten, but probably only ceremonially. Rocks and minerals occurring locally, and others brought from a distance, were used as material for artifacts and paint. Materials of animal origin—bones, antlers, and teeth—were extensively used, and a few objects are derived from freshwater and marine shells. Artifacts used in securing food by hunting and fishing consist of a few arrow-points chipped from stone and many others made of bone and antler; unilaterally and bilaterally barbed bone and antler points for harpoons or fish-spears; and barbed bone fish-hooks. As is to be expected of a corn-growing people, there was an abundance of both stationary and portable stone mortars and stone mullers or grinding stones. Methods of producing fire are suggested by the presence of pieces of iron pyrites and a perforated wooden disk resembling that on modern Iroquois fire drills. The pottery, mostly in fragments, suggests that the people here were proficient in its manufacture. Although round-bottomed like most pottery of northeastern North America, most of it is characterized by an extreme development and elaboration of the rim and the presence of occasional handles; in the latter respect the pottery marks an advance on that of most tribes of the Western Group of Iroquois and even that of the Hochelagans. The ware is less friable than that from Algonkian sites in Canada generally and from Neutral sites; there is also

¹The material from the other sites in Grenville county, seen in local collections, did not differ from that of Roebuck; intensive exploration, however, might reveal differences.

a higher degree of surface finish observable. Many of the rims bear angular lips, which in some cases appear to have been functional, in others ornamental. No evidence of a chronological sequence of types was discovered; the more simple forms, especially those with constricted necks and flaring mouths, however, may be survivals of evolutionary stages in the development of the collared type. Most of the ware differs from Neutral and most Tionontati and Huron pottery in being more elaborately and extensively decorated on the neck and the shoulders. A charred piece of three-strand rope and a charred remnant of what seems to have been a bag, woven from vegetal fibre, were the only textiles recovered. Tools used in the activities of men and women, such as the working of stone, bone, antler, wood, clay, and skin, consist of stone adzes (one of them with a groove across the front); polished stone knife-like objects; scrapers chipped from stone; whetstones; hammerstones; knives and chisels made from teeth of the beaver, porcupine, woodchuck, and bear; wedges and handles for tools, made of antler; bone awls, two of which are made of human ulnæ; and bone needles. Most of them do not differ much from those found at other Iroquoian sites in Ontario and New York. The use of some other stone, antler, and bone objects is problematical. Articles of personal adornment consist of an unfinished antler comb; beads made of stone, earthenware, bone, and shell; pendants made from canine teeth of the wapiti, bear, and raccoon; and several gorgets made from pieces of human skull, and a fragment of another made of slate. Disks made of stone, potsherds, and earthenware, a few perforated and many flattened deer phalanges, some of the latter bearing what may have been distinguishing marks, may have been used in games, and some small earthenware pots may have been children's toys. Only three fragments of stone pipes, one probably representing a bird form, were found, but earthenware pipes, mostly broken, were abundant. Several pipes were made from scapulæ of the deer. The making of earthenware pipes had reached a high stage of development, most of them being highly decorated with geometrical designs; others bear representations of human and animal forms. The characteristic pipe is of the trumpet type and bears a group of horizontal or diagonal grooves on the front of the bowl. A few of the artifacts were probably used in religious ceremonials and others may have been amuletic. Evidence of the following manufacturing processes was discovered: breaking, burning and breaking, cutting and breaking, cutting, chipping, pecking, rubbing or grinding, polishing, punching, perforating, drilling, impressing, luting, modelling, twisting, weaving, and painting. Decorative art is seen on pottery, pipes, and a few bone objects. Some of the decoration was produced with a roulette. The designs, which are mostly rectilinear, range from those composed of simple elements of one kind to elaborate combinations of several different elements; the latter, consisting mostly of reticulate patterns and several different kinds of chevrons, preponderating. There are a few crudely made curved lines. Impressed circles are common. Realistic, or life forms, which, with a few exceptions, are on earthenware pipes, include human forms (mostly faces), heads of owls and other birds, snakes, a turtle, possible frog forms, a fish, and possible plant forms. There is also what seems to have been intended to represent a phallus, carved in

antler. Raised semicircular designs, bearing rectangular depressions, on two earthenware pipes, may have been symbolic rather than ornamental. Most of the designs are similar to those occurring on pottery from other sites of the Eastern Group of Iroquois (Mohawk, Oneida, and Onondaga) in Ontario, Quebec, New York, and Vermont; a few others are like some of those on Neutral pottery. The only objects suggesting commercial relations with Indians of other stocks are beads made of columellæ of ocean shells and a harpoon point which seems to be derived from the bone of a sea mammal. All of the eighty-five human skeletons, found in graves of the site, were buried in a flexed position and in every direction. Most of them were the remains of women and children. No objects except a small pottery vessel were buried with the dead. Many scattered human bones, better preserved than those of skeletons in graves, and which were probably those of prisoners of war who had been roasted and eaten, were also discovered.

Although the abundance of pottery and other articles of domestic use, and the scarcity of objects that could have been used in warfare, suggest that the people here were peaceable, evidence was discovered that the site had been fortified by palisades, probably to keep out enemies.

No objects of European origin were found in the refuse deposits of the site, which was probably deserted by its inhabitants long before white men came to it or had settlements within trading distance.

The material recovered from the various refuse deposits indicates that the culture of the whole site was uniform; at any rate it is scarcely likely that great changes in the culture would have occurred during the brief occupation of the site, when we consider that Iroquois villages were mostly inhabited for only from ten to twenty years.

Although there is evidence of an earlier, if not contemporary, Algonkian occupation in the same area, there is very little evidence of the assimilation of Algonkian culture traits, the only objects that may be of Algonkian origin being stone gorgets. As compared with Algonkian there were few chipped stone points for arrows, and stone work generally was not so well developed as that in clay, bone, and antler. In comparison with other members of the Iroquoian family in Canada the people of this site seem to have advanced to a higher degree of culture than the Neutrals; were as advanced as the early Tionontati and Hurons, to whom they were certainly not inferior in their modelling of life forms on earthenware pipes; and they exceeded all three in the elaboration of pot forms.

Although the culture generally suggests that the inhabitants of this site should be included in the Eastern Group of Iroquois, the people seem to have been more nearly akin to those who occupied Jefferson county, New York, which Skinner identified as Onondaga. It is possible, however, considering the resemblance of the culture to that of the Onondaga on the one hand, and to that of the Mohawk, as probably represented at the site of Hochelaga, on the other, that, at the period when this and the nearby sites of the same culture were occupied, the Mohawk and Onondaga had not become separated into the present distinct tribes.

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PLATE I

Implements Used in Securing and Preparing Food

- Figure 1. Chert arrow-point. From surface. Cat. No. VIII-F-9155.
 Figure 2. Chert arrow-point. From general digging of site. Cat. No. VIII-F-13762.
 Figure 3. Chert arrow-point. From surface. Cat. No. VIII-F-13700.
 Figure 4. Chert arrow-point. From deposit 1. Cat. No. VIII-F-9440.
 Figure 5. Chert arrow-point or knife. From deposit 1. Cat. No. VIII-F-9441.
 Figure 6. Spear or knife point chipped from grey slate. From 30 inches deep in deposit 15. Cat. No. VIII-F-12541.
 Figure 7. Crude, probably unfinished, point for knife chipped from slate. From surface of deposit 4. Cat. No. VIII-F-13559.
 Figure 8. Bone point for an arrow or awl. From 18 inches deep in deposit 18. Cat. No. VIII-F-13287.
 Figure 9. Bone arrow-point. From 18 inches deep in deposit 10. Cat. No. VIII-F-11942.
 Figure 10. Notched bone arrow-point. From 6 inches deep in deposit 4. Cat. No. VIII-F-11234.
 Figure 11. Probable bone arrow-point. From 6 inches deep in deposit 11. Cat. No. VIII-F-12197.
 Figure 12. Pointed bone object. From 18 inches deep in deposit 4. Cat. No. VIII-F-11430.
 Figure 13. Bone point for arrow or fish-hook. From deposit 1. Cat. No. VIII-F-10006.
 Figure 14. Bone arrow-point. From deposit 11. Cat. No. VIII-F-12195.
 Figure 15. Antler point. From deposit 21. Cat. No. VIII-F-14012.
 Figure 16. Antler arrow-point. From deposit 15. Cat. No. VIII-F-12540.
 Figure 17. Antler arrow-point. From deposit 1. Cat. No. VIII-F-9450.
 Figure 18. Barbed antler arrow-point. From 12 inches deep in deposit 7. Cat. No. VIII-F-11612.
 Figure 19. Bone arrow-point. From 14 inches deep in deposit 10. Cat. No. VIII-F-11960.
 Figure 20. Bone harpoon point. From 4 inches deep in deposit 7. Cat. No. VIII-F-11615.
 Figure 21. Bone harpoon point. From 8 inches deep in deposit 5. Cat. No. VIII-F-11552.
 Figure 22. Unfinished bilaterally barbed bone harpoon point. From 7 inches deep in deposit 2. Cat. No. VIII-F-10360.
 Figure 23. Fragment of bilaterally barbed bone harpoon point. From 2 feet deep in deposit 7. Cat. No. VIII-F-11616.
 Figure 24. Bilaterally barbed bone harpoon point. From 16 inches deep in deposit 7. Cat. No. VIII-F-11617.
 Figure 25. Unilaterally barbed antler harpoon point. From 8 inches deep in deposit 1. Cat. No. VIII-F-9454.
 Figure 26. Bone harpoon point. From deposit 1. Cat. No. VIII-F-9456.
 Figure 27. Bilaterally barbed bone harpoon point. From 6 inches deep in deposit 2. Cat. No. VIII-F-10361.
 Figure 28. Bone blank for fish-hook. From 8 inches deep in deposit 11. Cat. No. VIII-F-12187.
 Figure 29. Fragment of unfinished bone fish-hook. From deposit 1. Cat. No. VIII-F-10068.
 Figure 30. Fragment of unfinished bone fish-hook. From deposit 15. Cat. No. VIII-F-13025.
 Figure 31. Bone fish-hook. From 10 inches deep in deposit 21. Cat. No. VIII-F-14010a.
 Figure 32. Broken bone fish-hook with perforated shank. From deposit 3. Cat. No. VIII-F-11110.
 Figure 33. Bone object, perhaps barb for compound fish-hook. From 12 inches deep in deposit 10. Cat. No. VIII-F-11938.
 Figure 34. Probable stone muller. From spring. Cat. No. VIII-F-10215.
 Figure 35. Muller. From general digging of site. Cat. No. VIII-F-13752.

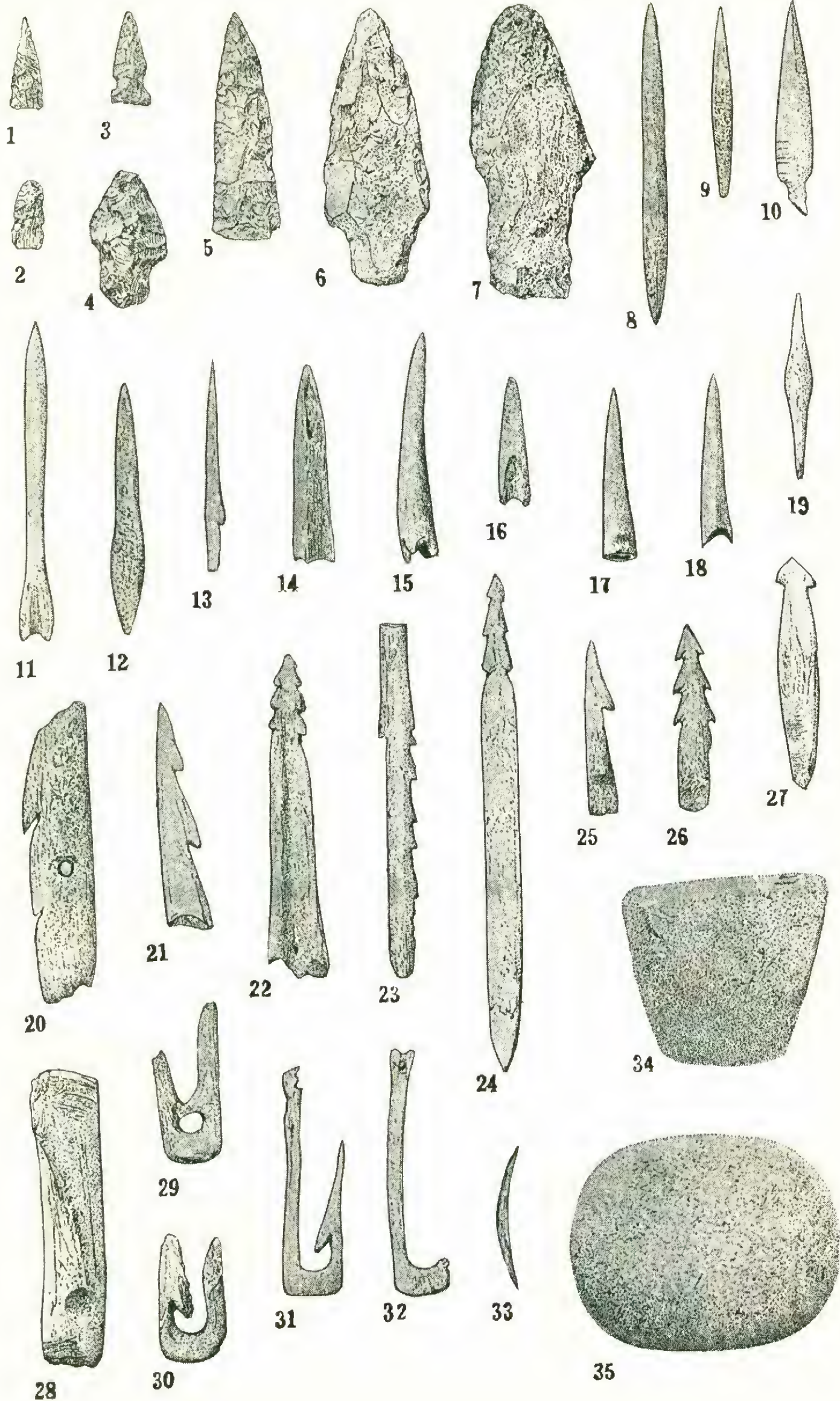


PLATE II

Pottery Fragments(About $\frac{1}{3}$ natural size)

- Figure 1. Pot fragment with chequered markings. From deposit 1. Cat. No. VIII-F-9499*k*.
 Figure 2. Fragment with scarified surface. From deposit 2. Cat. No. VIII-F-10371*b*.
 Figure 3. Small ladle-like earthenware object. From deposit 7. Cat. No. VIII-F-11621.
 Figure 4. Crude toy pot. From 1 foot deep in deposit 11. Cat. No. VIII-F-12255.
 Figure 5. Toy pot. From 10 inches deep in deposit 10. Cat. No. VIII-F-11913.
 Figure 6. Notched angular lip. From deposit 2. Cat. No. VIII-F-10611.
 Figure 7. Decorated rim edge. From deposit 1. Cat. No. VIII-F-9162.
 Figure 8. Decorated rim edge. From deposit 18. Cat. No. VIII-F-13864*h*.
 Figure 9. Decorated rim edge. From deposit 2. Cat. No. VIII-F-10485.
 Figure 10. Decorated rim edge. From deposit 2. Cat. No. VIII-F-10721*d*.
 Figure 11. Decorated rim edge. From deposit 1. Cat. No. VIII-F-9554.
 Figure 12. Shoulder fragment with lug. From deposit 14. Cat. No. VIII-F-12390.
 Figure 13. Cleft in peaked part of the lip seen in Plate IX, figure 23.
 Figure 14. Pot fragment. From deposit 11. Cat. No. VIII-F-12023.
 Figure 15. Decorated fragment. From deposit 1. Cat. No. VIII-F-9766*b*.
 Cross-section in Plate XII, figure 5.
 Figure 16. Part of decorated rim. From deposit 1. Cat. No. VIII-F-9558*b*.
 Figure 17. Rim fragment. From deposit 2. Cat. No. VIII-F-10770*a*.
 Figure 18. Rim fragment. From deposit 15. Cat. No. VIII-F-12687*c*.
 Figure 19. Rim fragment. From deposit 2. Cat. No. VIII-F-10466.
 Figure 20. Decorated shoulder fragment. From deposit 2. Cat. No. VIII-F-10384.
 Figure 21. Decorated shoulder fragment. From deposit 18. Cat. No. VIII-F-13891.
 Figure 22. Decorated pot fragment. From deposit 2. Cat. No. VIII-F-10451.
 Figure 23. Rim fragment. From deposit 7. Cat. No. VIII-F-11627.
 Figures 24-26. Rim fragments. From deposit 1. Cat. Nos. VIII-F-9158, VIII-F-9774*a*, and VIII-F-9763.
 Figure 27. Neck fragment. From deposit 1. Cat. No. VIII-F-9529.
 Figure 28. Shoulder fragment. From deposit 15. Cat. No. VIII-F-12578.
 Figure 29. Rim fragment. From deposit 18. Cat. No. VIII-F-13884*c*.
 Figure 30. Rim fragment. From deposit 2. Cat. No. VIII-F-10641*f*.
 Figure 31. Rim fragment. From deposit 2. Cat. No. VIII-F-10495.
 Figure 32. Rim fragment. From deposit 10. Cat. No. VIII-F-12084.
 Figure 33. Rim fragment. From deposit 1. Cat. No. VIII-F-9589*a, b*.
 Figure 34. Shoulder fragment. From deposit 1. Cat. No. VIII-F-9636*b, c*.
 Cross-section in text Figure 2, *b*.
 Figure 35. Rim fragment. From deposit 1. Cat. No. VIII-F-9788*e*.
 Figure 36. Rim fragment. From site. Cat. No. VIII-F-13767*e*.
 Figure 37. Rim fragment. From deposit 2. Cat. No. VIII-F-10622*a*.
 Figure 38. Shoulder fragment. From deposit 2. Cat. No. VIII-F-10621.
 Figure 39. Rim fragment. From deposit 1. Cat. No. VIII-F-9686*a*.
 Figure 40. Rim fragment. From deposit 1. Cat. No. VIII-F-9731*a*.
 Figure 41. Rim fragment. From deposit 2. Cat. No. VIII-F-10615*a*.

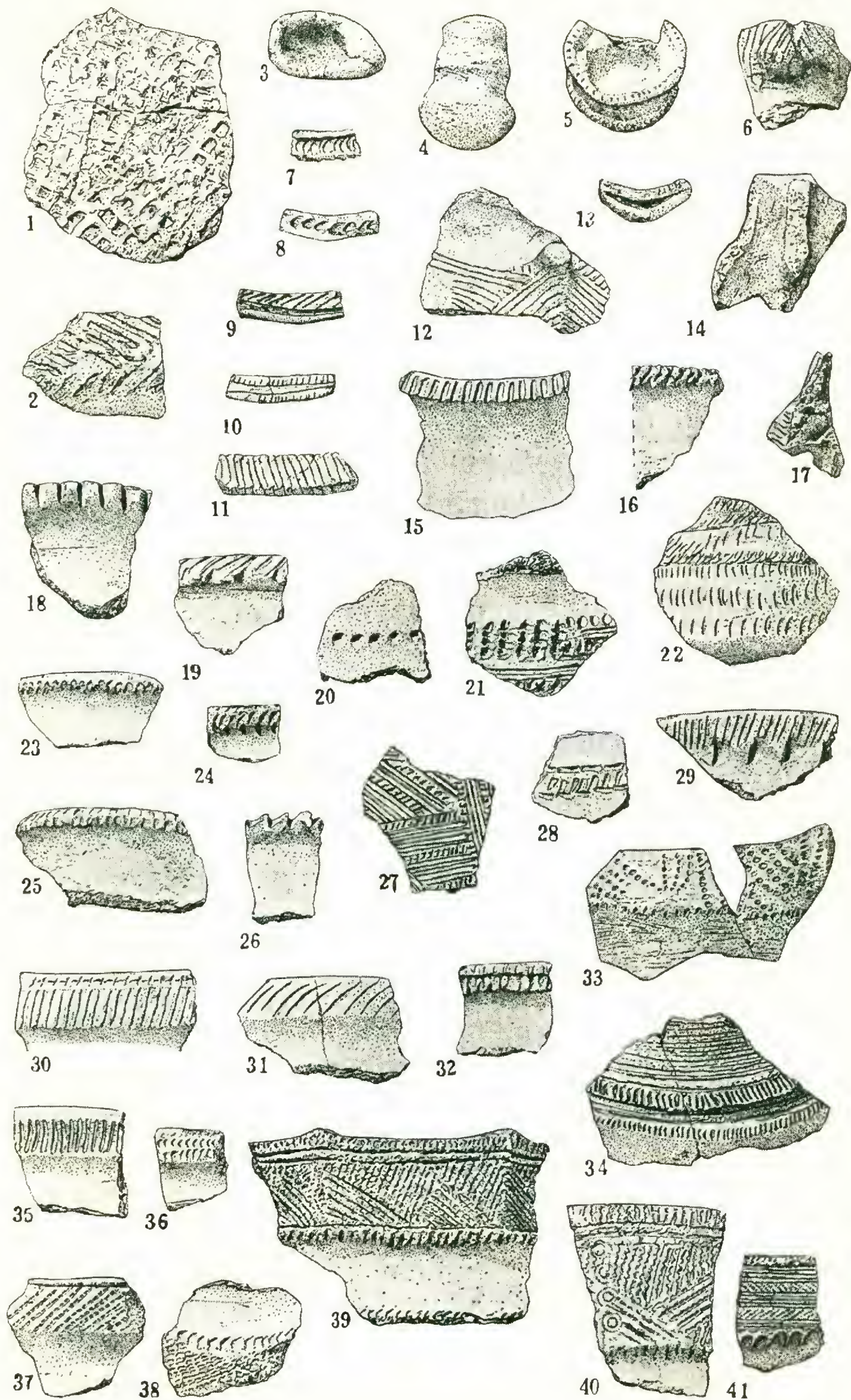


PLATE III

Fragments of Decorated Pottery

- Figure 1. Angular lip with decoration on inside. From deposit 18. Cat. No. VIII-F-13886.
- Figure 2. Rim fragment. From deposit 2. Cat. No. VIII-F-10472.
- Figure 3. Rim fragment. From deposit 2. Cat. No. VIII-F-10478.
- Figure 4. Rim fragment. From deposit 2. Cat. No. VIII-F-10528.
- Figure 5. Rim fragment with decoration on the inside. From surface of site. Cat. No. VIII-F-13706a.
- Figure 6. Rim fragment. From deposit 23. Cat. No. VIII-F-14108.
- Figure 7. Decorated angular lip. From deposit 18. Cat. No. VIII-F-13878e.
- Figure 8. Rim, only partly decorated. From general digging of site. Cat. No. VIII-F-12026.
- Figure 9. Rim fragment with deeply impressed horizontal lines. From deposit 15. Cat. No. VIII-F-12596. Cross-section in Plate XII, figure 46.
- Figure 10. Rim fragment. From deposit 1. Cat. No. VIII-F-9933.
- Figure 11. Rim fragment. From deposit 19. Cat. No. VIII-F-13967b. Cross-section in Plate XII, figure 11.
- Figure 12. Decorated rim with scalloped edge. From deposit 15. Cat. No. VIII-F-12571.
- Figure 13. Decorated, deeply concaved rim fragment. From deposit 15. Cat. No. VIII-F-12598b. Cross-section in Plate XII, figure 47.
- Figure 14. Rim fragment. From deposit 17. Cat. No. VIII-F-13193.
- Figure 15. Rim fragment. From deposit 4. Cat. No. VIII-F-11300k.
- Figure 16. Rim fragment. From deposit 2. Cat. No. VIII-F-10526.
- Figure 17. Fragment with decorated rim and neck. From deposit 15. Cat. No. VIII-F-12601.
- Figure 18. Rim fragment. From deposit 15. Cat. No. VIII-F-12703l.
- Figure 19. Fragment with decorated rim and neck. From deposit 2. Cat. No. VIII-F-10651a.
- Figure 20. Fragment with decorated rim and shoulder. From deposit 20. Cat. No. VIII-F-13967.
- Figure 21. Rim fragment. From deposit 15. Cat. No. VIII-F-12701t.
- Figure 22. Rim fragment. From general digging of site. Cat. No. VIII-F-12015a, b.
- Figure 23. Rim fragment. From the spring. Cat. No. VIII-F-10240a.
- Figure 24. Rim fragment. From deposit 15. Cat. No. VIII-F-12703f.
- Figure 25. Fragment of hexagonal rim. From deposit 2. Cat. No. VIII-F-10568.
- Figure 26. Rim fragment. From deposit 15. Cat. No. VIII-F-12570. Cross-section in Plate XII, figure 78.
- Figure 27. Rim fragment. From deposit 1. Cat. No. VIII-F-9934.
- Figure 28. Fragment of undulating rim. From deposit 1. Cat. No. VIII-F-9568.
- Figure 29. Rim fragment with reticulate design. From deposit 1. Cat. No. VIII-F-9594b.
- Figure 30. Crudely decorated rim fragment. From deposit 1. Cat. No. VIII-F-9599.
- Figure 31. Rim fragment. From general digging of site. Cat. No. VIII-F-12038e.
- Figure 32. Rim fragment. From deposit 17. Cat. No. VIII-F-13188.
- Figure 33. Rim fragment. From deposit 2. Cat. No. VIII-F-10515.
- Figure 34. Rim fragment. From deposit 1. Cat. No. VIII-F-9831v.
- Figure 35. Rim fragment. From deposit 7. Cat. No. VIII-F-11642a.

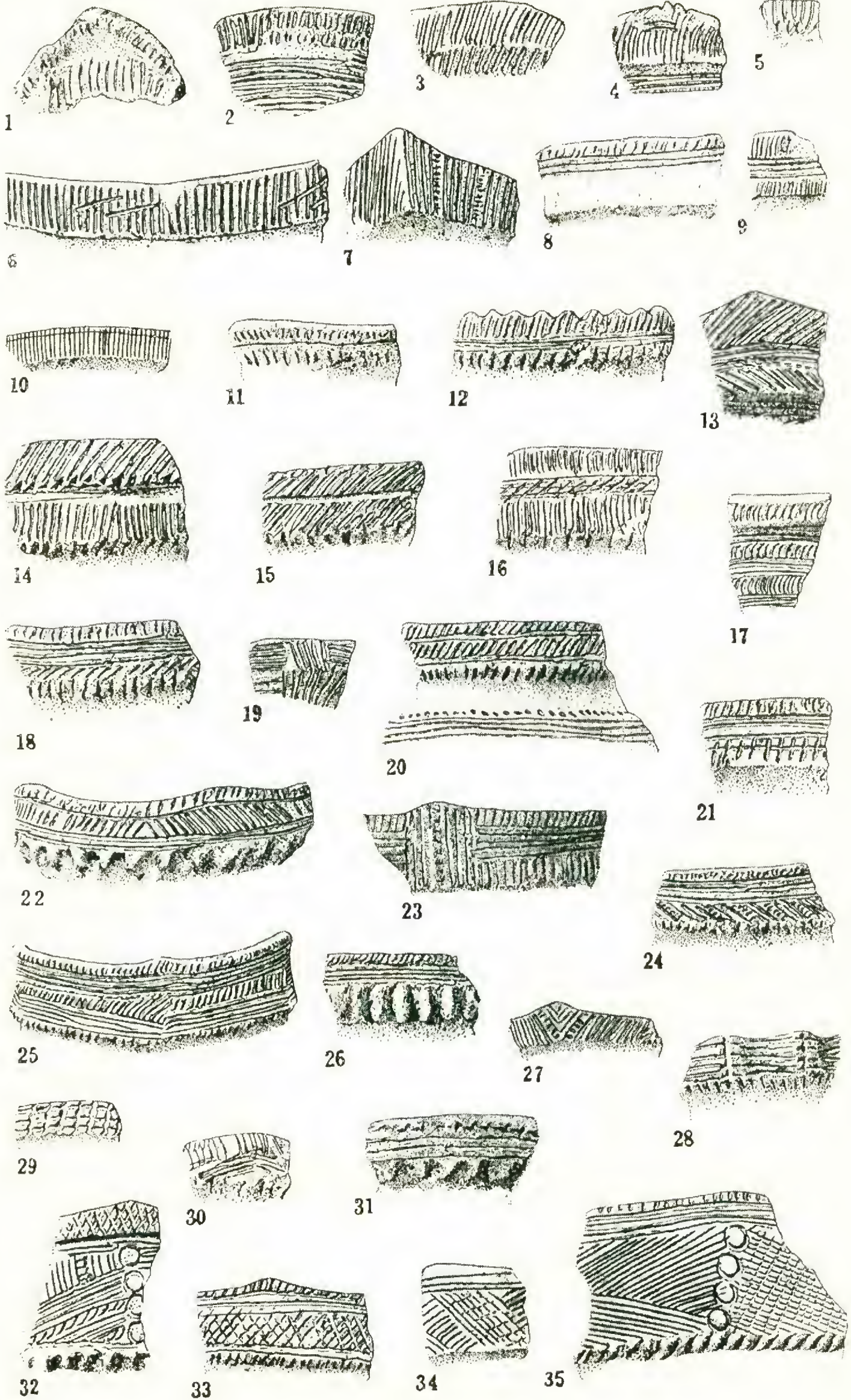


PLATE IV

Fragments of Decorated Pottery

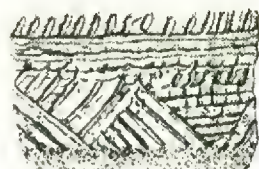
- Figure 1. Rim fragment. From deposit 15. Cat. No. VIII-F-12704*c*.
 Figure 2. Rim fragment. From deposit 18. Cat. No. VIII-F-13888.
 Figure 3. Rim fragment with chevron design. From deposit 4. Cat. No. VIII-F-11308*i, k*.
 Figure 4. Rim fragment with complex design. From surface of site. Cat. No. VIII-F-17743*e*.
 Figure 5. Pot fragment with decoration on rim, neck, and shoulder. From deposit 15. Cat. No. VIII-F-12552*a, b*.
 Figure 6. Rim fragment. From deposit 2. Cat. No. VIII-F-10685*c*.
 Figure 7. Rim fragment. From deposit 21. Cat. No. VIII-F-14024*e*.
 Figure 8. Rim fragment. From deposit 1. Cat. No. VIII-F-9860*d*.
 Figure 9. Rim fragment. From deposit 3. Cat. No. VIII-F-11150.
 Figure 10. Rim fragment. From deposit 13. Cat. No. VIII-F-12308.
 Cross-section in Plate XII, figure 72.
 Figure 11. Rim fragment. From deposit 2. Cat. No. VIII-F-10524.
 Figure 12. Rim fragment. From deposit 4. Cat. No. VIII-F-11327*b*.
 Cross-section in Plate XII, figure 84.
 Figure 13. Rim fragment. From deposit 15. Cat. No. VIII-F-12599.
 Cross-section in Plate XII, figure 45.
 Figure 14. Rim fragment. From deposit 1. Cat. No. VIII-F-9602*a*.
 Figure 15. Rim fragment. From deposit 1. Cat. No. VIII-F-9939.
 Figure 16. Rim fragment. From deposit 7. Cat. No. VIII-F-11630.
 Figure 17. Rim fragment. From deposit 18. Cat. No. VIII-F-13882.
 Figure 18. Rim fragment. From deposit 2. Cat. No. VIII-F-10601.
 Figure 19. Rim fragment. From general digging of site. Cat. No. VIII-F-12120*i*.
 Figure 20. Rim fragment. From deposit 7. Cat. No. VIII-F-11683*b*.
 Figure 21. Rim fragment. From deposit 2. Cat. No. VIII-F-10534*a, b*.
 Figure 22. Rim fragment. From deposit 15. Cat. No. VIII-F-12553*a*.
 Figure 23. Rim fragment. From deposit 15. Cat. No. VIII-F-12724*n*.
 Figure 24. Rim fragment. From general digging of site. Cat. No. VIII-F-12099*j*.
 Figure 25. Rim fragment. From deposit 1. Cat. No. VIII-F-9612.



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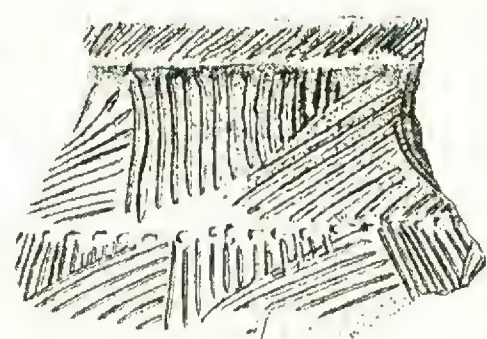
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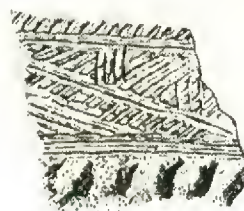
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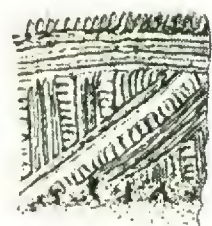
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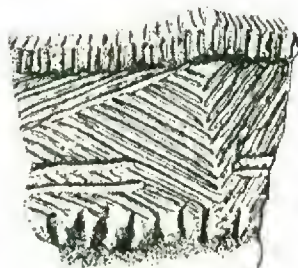
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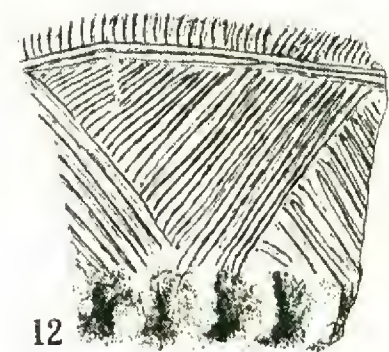
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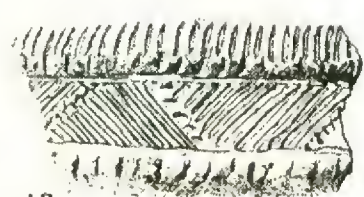
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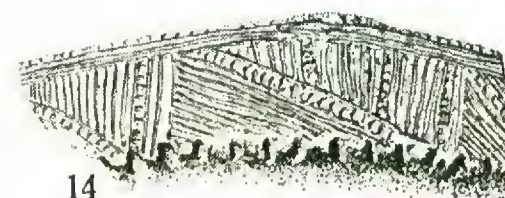
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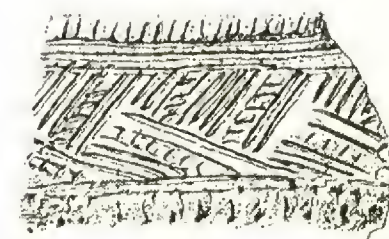
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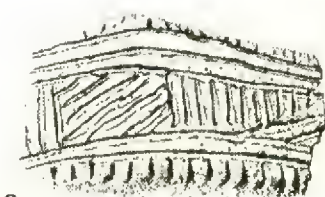
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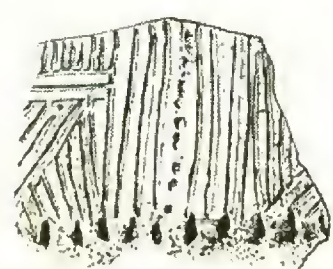
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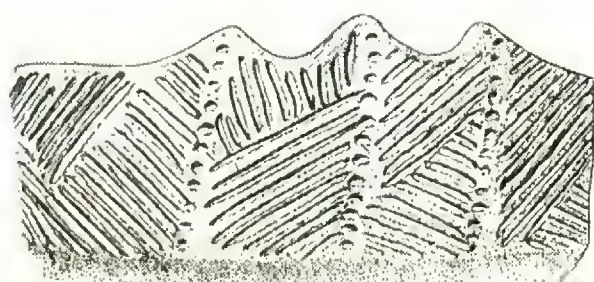
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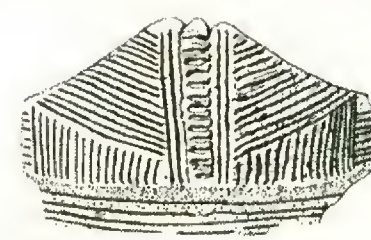
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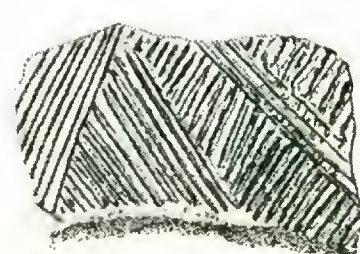
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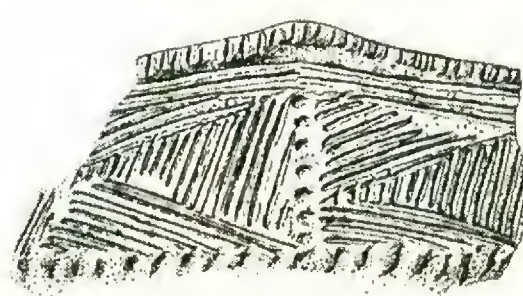
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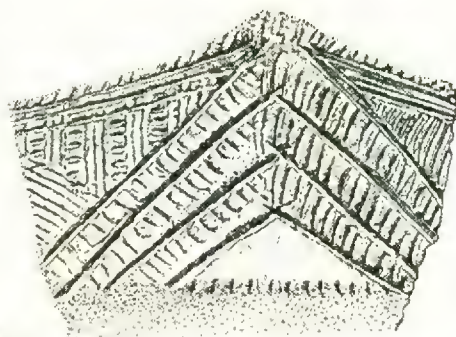
PLATE V

Fragments of Decorated Pottery

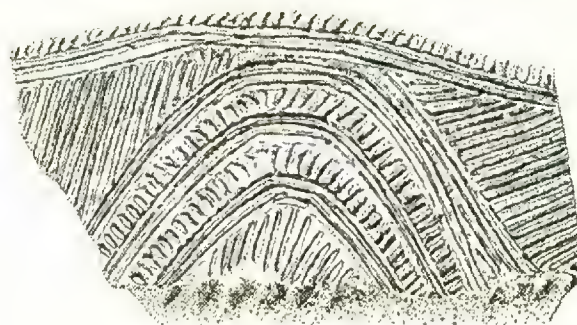
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| Figure 3. | Rim fragment. | From deposit 17. | Cat. No. VIII-F-13187. |
| Figure 4. | Rim fragment. | From deposit 15. | Cat. No. VIII-F-12820c. |
| Figure 5. | Angular lip of rim. | From deposit 15. | Cat. No. VIII-F-12561. |
| Figure 6. | Rim fragment. | From deposit 2. | Cat. No. VIII-F-10538. |
| Figure 7. | Rim fragment. | From deposit 15. | Cat. No. VIII-F-12823. |
| Figure 8. | Rim fragment. | From deposit 2. | Cat. No. VIII-F-10539. |
| Figure 9. | Rim fragment. | From deposit 4. | Cat. No. VIII-F-11332c. |
| Figure 10. | Rim fragment. | From deposit 2. | Cat. No. VIII-F-10542. |
| Figure 11. | Rim fragment. | From deposit 1. | Cat. No. VIII-F-9693. |
| Figure 12. | Rim fragment. | From deposit 2. | Cat. Nos. VIII-F-10537 and VIII-F-10544. |
| Figure 13. | Rim fragment. | From deposit 2. | Cat. No. VIII-F-10690f. |
| Figure 14. | Rim fragment. | From deposit 1. | Cat. No. VIII-F-9702. |
| Figure 15. | Rim fragment. | From deposit 2. | Cat. No. VIII-F-10541. |
| Figure 16. | Rim fragment. | From deposit 1. | Cat. No. VIII-F-9691a, d. |
| Figure 17. | Shoulder fragment. | From deposit 11. | Cat. No. VIII-F-12032. |
| Figure 18. | Rim fragment. | From deposit 1. | Cat. No. VIII-F-9156a. |
| Figure 19. | Rim fragment. | From deposit 15. | Cat. No. VIII-F-13157. |
| Figure 20. | Angular lip of rim. | From deposit 2. | Cat. No. VIII-F-10546. |
| Figure 21. | Rim fragment. | From deposit 15. | Cat. No. VIII-F-12567. |
| Figure 22. | Rim fragment. | From deposit 1. | Cat. No. VIII-F-9718. |
| Figure 23. | Rim fragment. | From deposit 4. | Cat. No. VIII-F-11252. |
| Figure 24. | Rim fragment. | From deposit 15. | Cat. No. VIII-F-12569. |
| Figure 25. | Rim fragment. | From general digging. | Cat. No. VIII-F-12025. |
| Figure 26. | Rim fragment. | From deposit 4. | Cat. No. VIII-F-11251a. |
| Figure 27. | Rim fragment. | From deposit 2. | Cat. No. VIII-F-10557. |
| Figure 28. | Shoulder fragment. | From deposit 7. | Cat. No. VIII-F-11631. |
| Figure 29. | Shoulder fragment. | From deposit 2. | Cat. No. VIII-F-10448. |



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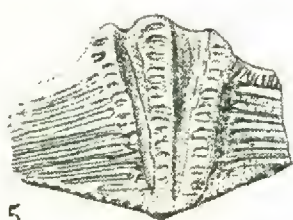
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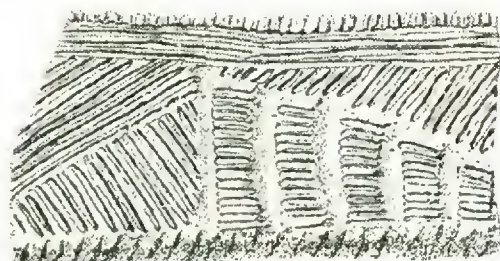
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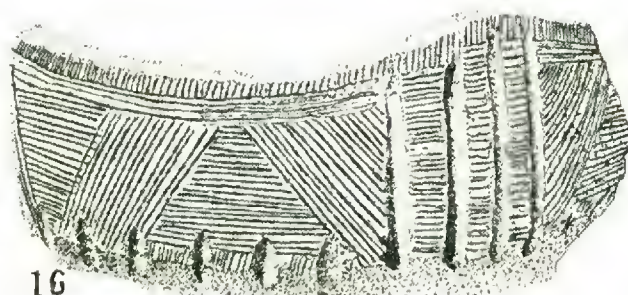
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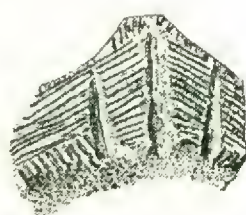
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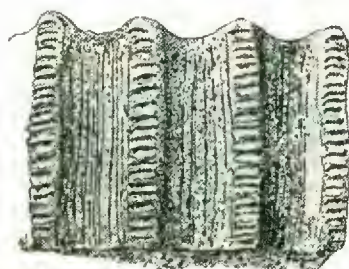
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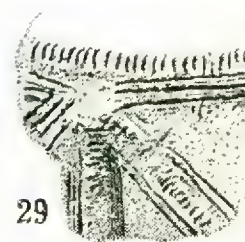
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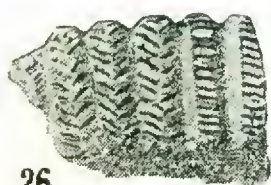
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PLATE VI

Fragments of Decorated Pottery

- Figure 1. Rim fragment. From general digging of site. Cat. No. VIII-F-12122*o*.
 Figure 2. Shoulder fragment. From deposit 1. Cat. No. VIII-F-9510.
 Figure 3. Rim fragment. From deposit 1. Cat. No. VIII-F-9828*i*.
 Figure 4. Rim fragment. From deposit 3. Cat. No. VIII-F-11128*a, d, e*.
 Figure 5. Shoulder fragment. From deposit 1. Cat. No. VIII-F-9524.
 Figure 6. Shoulder fragment. From deposit 1. Cat. No. VIII-F-9519.
 Figure 7. Rim and neck fragment. From deposit 1. Cat. No. VIII-F-9574.
 Figure 8. Rim fragment. From deposit 7. Cat. No. VIII-F-11644.
 Figure 9. Shoulder fragment. From deposit 4. Cat. No. VIII-F-11278*b*.
 Figure 10. Rim fragment. From deposit 1. Cat. No. VIII-F-9837*o*.
 Figure 11. Rim and neck fragment. From deposit 1. Cat. No. VIII-F-9493.
 Figure 12. Shoulder fragment. From deposit 1. Cat. No. VIII-F-9515.
 Figure 13. Rim fragment. From deposit 2. Cat. No. VIII-F-10710.
 Figure 14. Rim fragment. From deposit 1. Cat. No. VIII-F-9849*d*.
 Figure 15. Shoulder fragment. From deposit 11. Cat. No. VIII-F-12033.

Cross-section in text Figure 2, *e*.

- Figure 16. Shoulder fragment. From deposit 1. Cat. No. VIII-F-9527.
 Figure 17. Rim fragment. From general digging of site. Cat. No. VIII-F-13771.
 Figure 18. Rim fragment. From deposit 4. Cat. No. VIII-F-11248*a*.
 Figure 19. Shoulder fragment. From deposit 15. Cat. No. VIII-F-12549.
 Figure 20. Rim fragment. From deposit 2. Cat. No. VIII-F-10712*a*.

Cross-section in Plate XII, figure 66.

- Figure 21. Rim fragment. From deposit 4. Cat. No. VIII-F-11328*k*.
 Figure 22. Rim fragment. From deposit 2. Cat. No. VIII-F-10731*c*.
 Figure 23. Rim fragment. From deposit 4. Cat. No. VIII-F-11328*f*.
 Figure 24. Rim fragment. From deposit 15. Cat. No. VIII-F-12593*a, b*.
 Figure 25. Rim fragment. From deposit 2. Cat. No. VIII-F-10565.
 Figure 26. Rim fragment. From general digging of site. Cat. No. VIII-F-13768*a, b*.
 Figure 27. Rim fragment. From deposit 2. Cat. No. VIII-F-11687*a*.
 Figure 28. Rim fragment. From deposit 2. Cat. No. VIII-F-10520*b*.
 Figure 29. Rim fragment. From deposit 4. Cat. No. VIII-F-11328*e*.



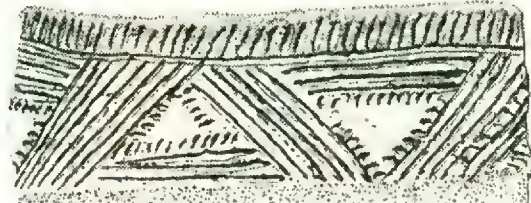
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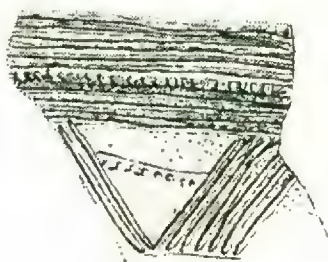
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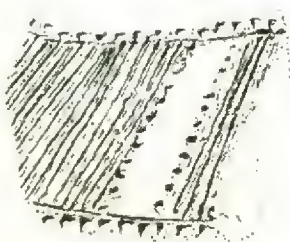
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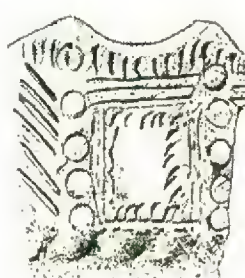
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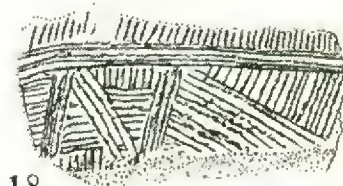
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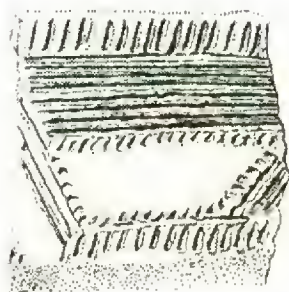
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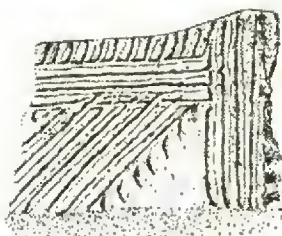
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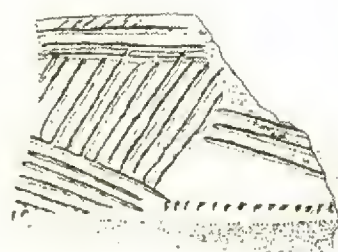
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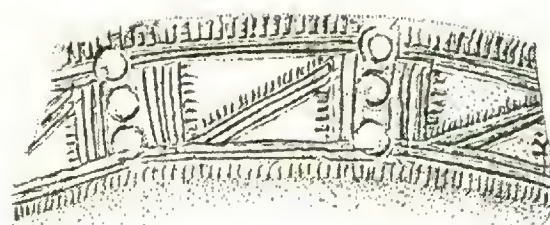
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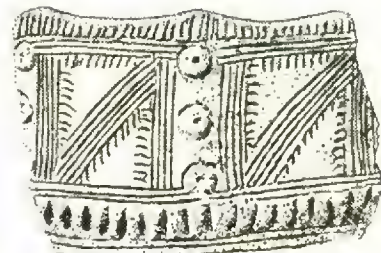
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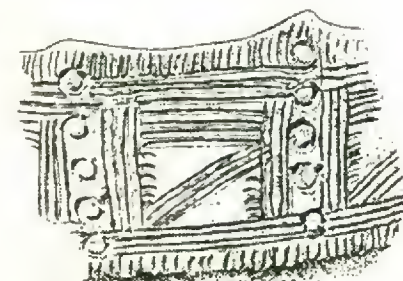
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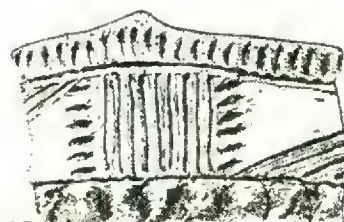
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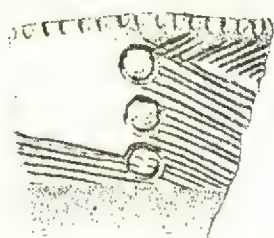


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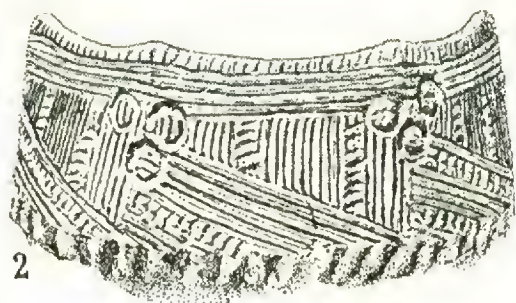
PLATE VII

Fragments of Decorated Pottery

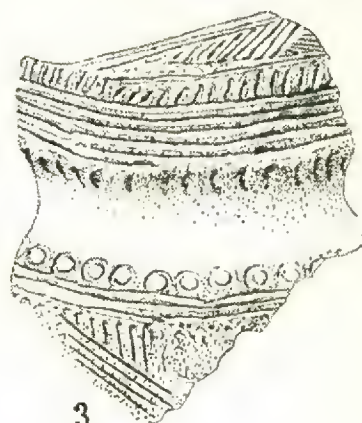
- Figure 1. Rim fragment. From deposit 7. Cat. No. VIII-F-11636.
- Figure 2. Part of hexagonal rim. From deposit 15. Cat. Nos. VIII-F-12791*v*, *z*, and VIII-F-12801*a*, *b*, *c*.
- Figure 3. Fragment of wide, flange-like extension of rim. From deposit 1. Cat. No. VIII-F-9725. Cross-section in Plate XII, figure 80.
- Figure 4. Rim fragment. From deposit 15. Cat. No. VIII-F-12564. Cross-section in Plate XII, figure 61.
- Figure 5. Rim fragment. From deposit 1. Cat. No. VIII-F-10535. Cross-section in Plate XII, figure 73.
- Figure 6. Rim fragment. From deposit 15. Cat. Nos. VIII-F-12566 and VIII-F-12723*a*, *b*, *c*.
- Figure 7. Rim fragment. From general digging. Cat. No. VIII-F-12040*b*.
- Figure 8. Fragment of pot with decorated rim, neck, and shoulder. From deposit 1. Cat. No. VIII-F-9631*a*.
- Figure 9. Partly restored rim. From deposit 15. Cat. No. VIII-F-12579*a*.
- Figure 10. Rim with handle. From deposit 2. Cat. No. VIII-F-10624*c*.
- Figure 11. Partly restored pot. From deposit 23. Cat. No. VIII-F-14106.



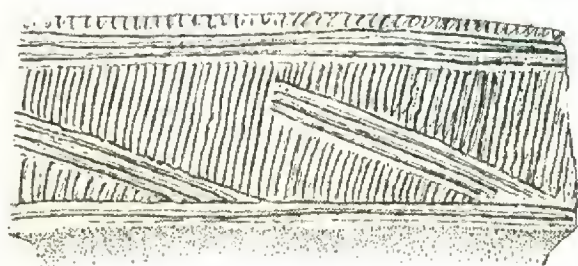
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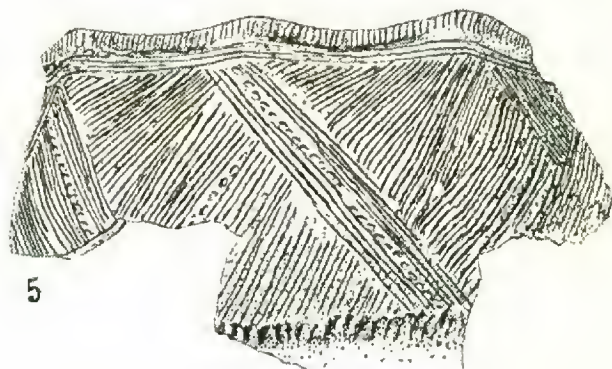
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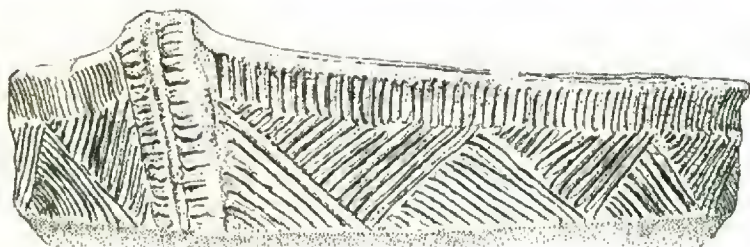
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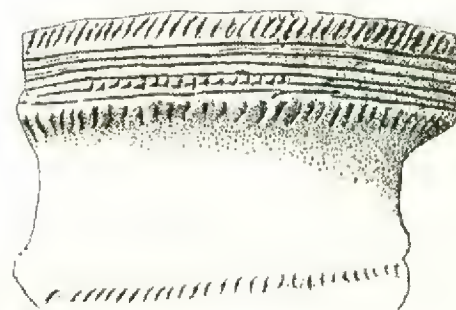
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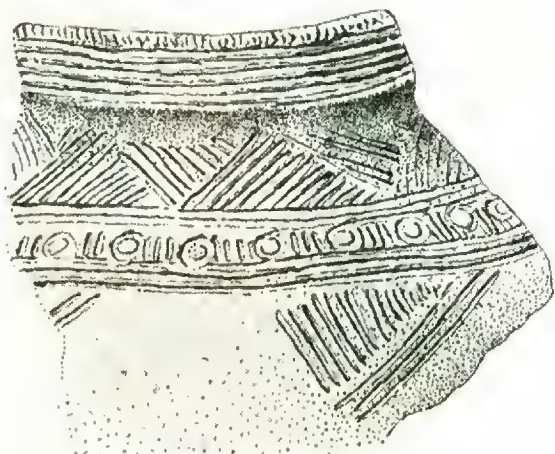
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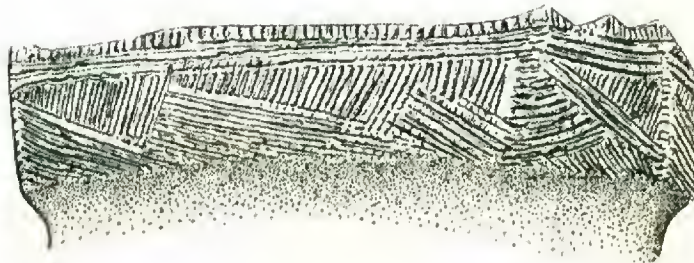
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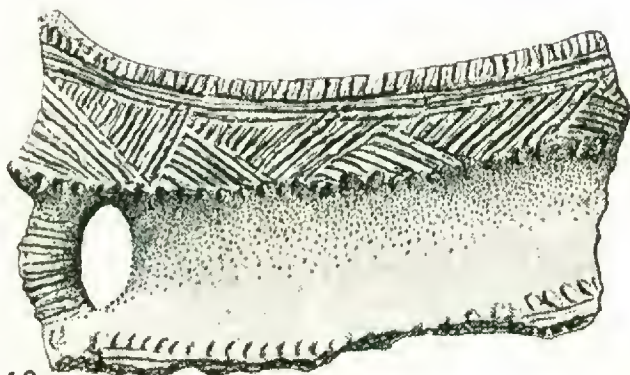
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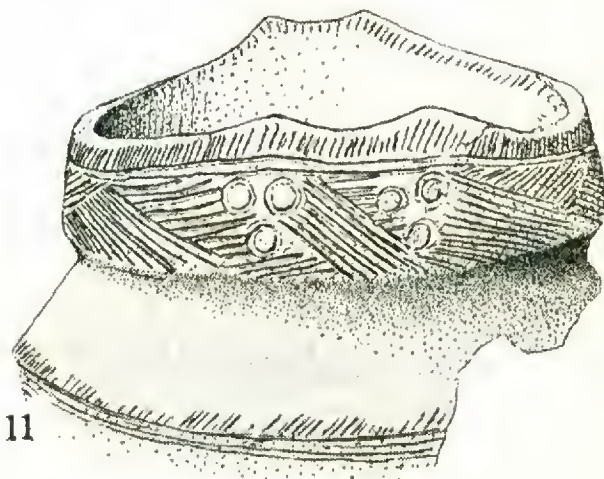
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PLATE VIII

Fragments of Decorated Pottery

- Figure 1. Rim fragment. From deposit 11. Cat. No. VIII-F-12122*m*.
 Figure 2. Rim fragment. From deposit 1. Cat. No. VIII-F-9647.
 Figure 3. Rim fragment. From deposit 2. Cat. No. VIII-F-10589.
 Figure 4. Rim fragment. From deposit 2. Cat. No. XIII-F-10503. Cross-section in
 Plate XII, figure 75.
 Figure 5. Fragment of small pot. From deposit 4. Cat. No. VIII-F-11253.
 Figure 6. Rim fragment. From deposit 7. Cat. No. VIII-F-11633.
 Figure 7. Rim fragment. From deposit 2. Cat. No. VIII-F-10576.
 Figure 8. Rim fragment. From deposit 15. Cat. No. VIII-F-12784*b*.
 Figure 9. Rim fragment. From deposit 1. Cat. No. VIII-F-9638.
 Figure 10. Rim fragment. From deposit 2. Cat. No. VIII-F-10579.
 Figure 11. Rim fragment. From deposit 1. Cat. No. VIII-F-9632.
 Figure 12. Rim fragment. From deposit 2. Cat. No. VIII-F-10564.
 Figure 13. Rim fragment. From deposit 1. Cat. No. VIII-F-9653.
 Figure 14. Rim fragment. From deposit 1. Cat. No. VIII-F-9899*b*.
 Figure 15. Fragment of polygonal rim. From deposit 4. Cat. No. VIII-F-11257*a*.
 Figure 16. Rim fragment. From general digging. Cat. No. VIII-F-12014.
 Figure 17. Rim fragment. From deposit 2. Cat. No. VIII-F-10577.
 Figure 18. Rim fragment. From deposit 7. Cat. No. VIII-F-11713*a*.
 Figure 19. Rim fragment. From deposit 2. Cat. No. VIII-F-10742*b*.
 Figure 20. Rim fragment. From deposit 1. Cat. No. VIII-F-9881*a*.
 Figure 21. Rim fragment. From deposit 4. Cat. No. VIII-F-11344*o*.
 Figure 22. Shoulder fragment. From deposit 15. Cat. No. VIII-F-12574.
 Figure 23. Rim fragment. From deposit 2. Cat. No. VIII-F-10566.
 Figure 24. Rim fragment. From deposit 1. Cat. No. VIII-F-9909*g*.
 Figure 25. Rim fragment. From deposit 2. Cat. No. VIII-F-10574.
 Figure 26. Neck fragment. From deposit 15. Cat. No. VIII-F-12551.
 Figure 27. Shoulder fragment. From deposit 1. Cat. No. VIII-F-9548.
 Cross-section in text Figure 2, *c*.
 Figure 28. Shoulder fragment. From deposit 2. Cat. No. VIII-F-10432.
 Figure 29. Rim fragment. From general digging. Cat. No. VIII-F-12122*i*.
 Figure 30. Rim fragment with part of human or mammalian form. From general digging.
 Cat. No. VIII-F-12043.

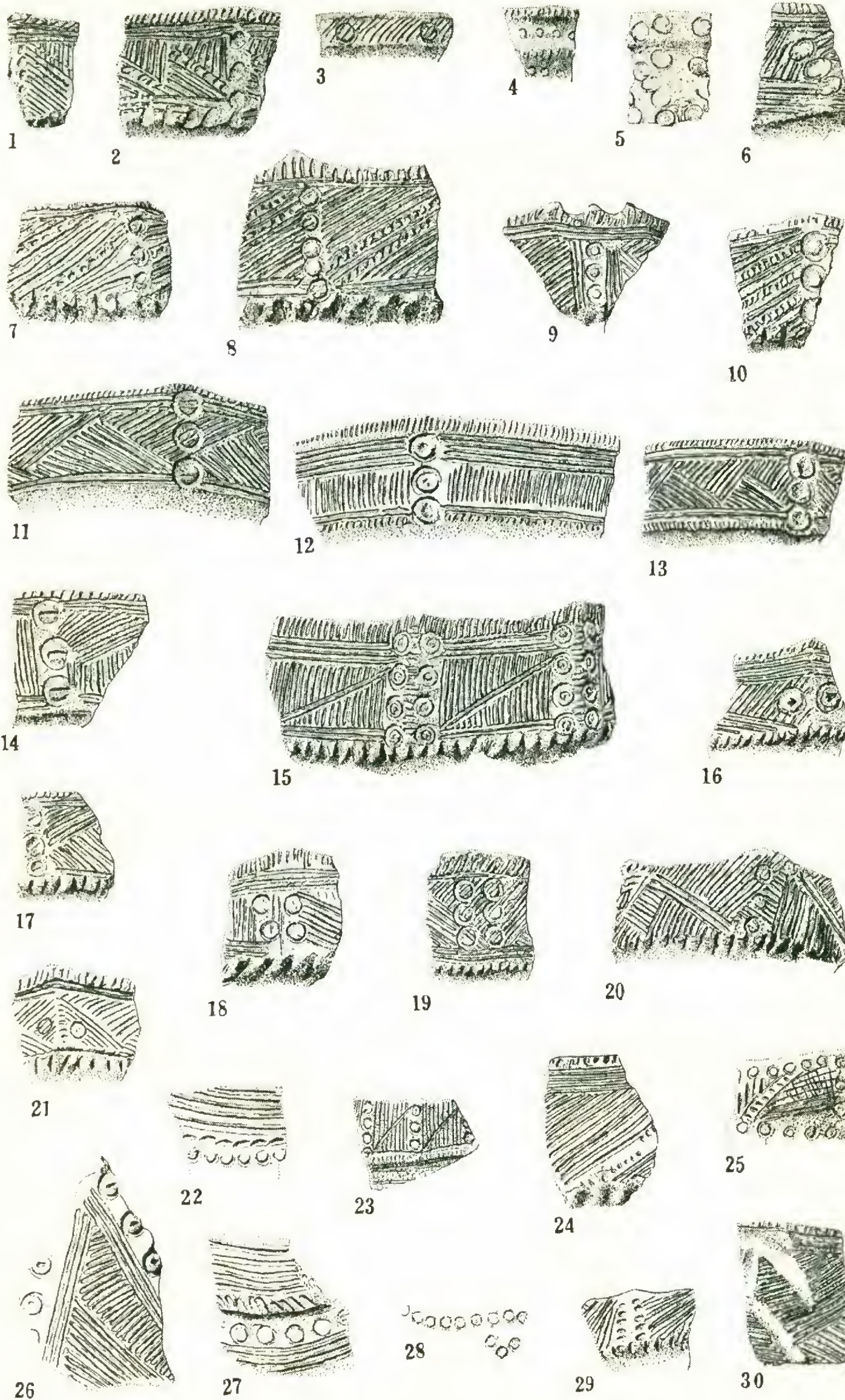
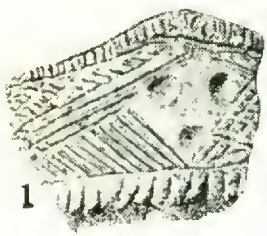


PLATE IX

Fragments of Decorated Pottery

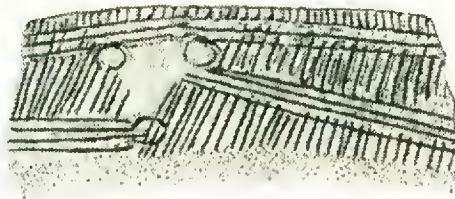
- Figure 1. Rim fragment. From deposit 14. Cat. No. VIII-F-12389.
 Figure 2. Rim fragment. From deposit 1. Cat. No. VIII-F-9687a.
 Figure 3. Rim fragment. From deposit 1. Cat. No. VIII-F-9903h.
 Figure 4. Rim fragment. From deposit 1. Cat. No. VIII-F-9666.
 Figure 5. Fragment of polygonal rim. From deposit 1. Cat. No. VIII-F-9643.
 Figure 6. Fragment of polygonal rim. From deposit 1. Cat. No. VIII-F-9909k.
 Figure 7. Fragment of polygonal rim. From deposit 15. Cat. No. VIII-F-12757b.
 Figure 8. Angular lip. From deposit 1. Cat. No. VIII-F-9668.
 Figure 9. Rim fragment. From deposit 1. Cat. No. VIII-F-9667.
 Figure 10. Rim fragment. From deposit 2. Cat. No. VIII-F-10587.
 Figure 11. Rim fragment. From deposit 3. Cat. No. VIII-F-11151.
 Cross-section in Plate XII, figure 44.
 Figure 12. Rim fragment. From deposit 7. Cat. No. VIII-F-11635.
 Figure 13. Rim fragment. From general digging. Cat. No. VIII-F-12158a.
 Cross-section in Plate XII, figure 65.
 Figure 14. Angular lip. From general digging. Cat. No. VIII-F-12164d.
 Figure 15. Rim fragment. From deposit 1. Cat. No. VIII-F-9665.
 Figure 16. Angular lip. From deposit 7. Cat. No. VIII-F-11718a.
 Figure 17. Angular lip. From deposit 1. Cat. No. 9916f.
 Figure 18. Rim fragment. From deposit 4. Cat. Nos. VIII-F-11317b, c, g, and VIII-F-11343a.
 Figure 19. Rim fragment. From deposit 4. Cat. No. VIII-F-11343h.
 Figure 20. Rim fragment. From general digging. Cat. Nos. VIII-F-11679a, VIII-F-12127c, and VIII-F-12156a.
 Figure 21. Rim fragment. From deposit 2. Cat. No. VIII-F-10600a.
 Figure 22. Rim fragment. From deposit 17. Cat. No. VIII-F-13819.
 Figure 23. Side of angular lip. From surface of site. Cat. No. VIII-F-13704.
 Figure 24. Rim fragment. From deposit 2. Cat. No. VIII-F-10597.
 Figure 25. Cast of modelled human face from pot rim. Original from deposit 1. In collection of W. Lawson. Cat. No. VIII-F-10195.
 Figure 26. Modelled human face from side of pot rim. From 1 foot deep in deposit 5. Cat. No. VIII-F-11580.
 Figure 27. Fragment of pot rim with crude representation of human face. From deposit 17. Cat. No. VIII-F-13194. Cross-section in Plate XII, figure 82.



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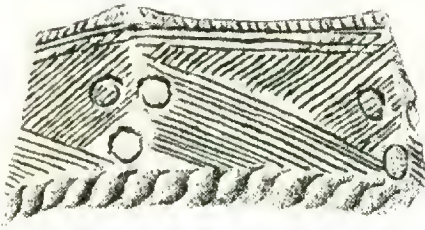
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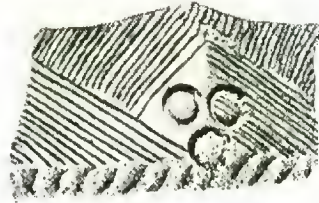
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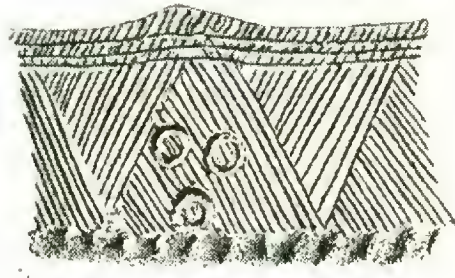
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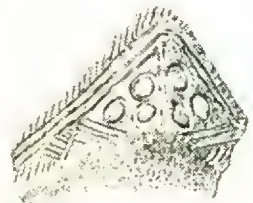
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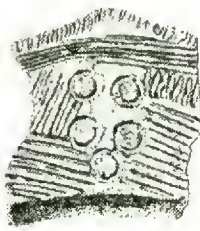
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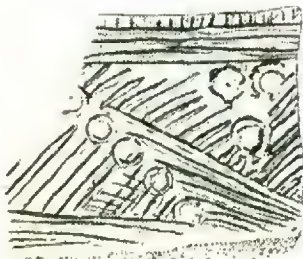
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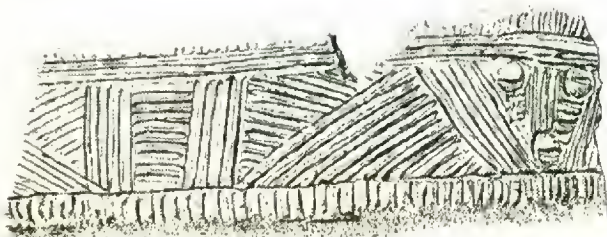
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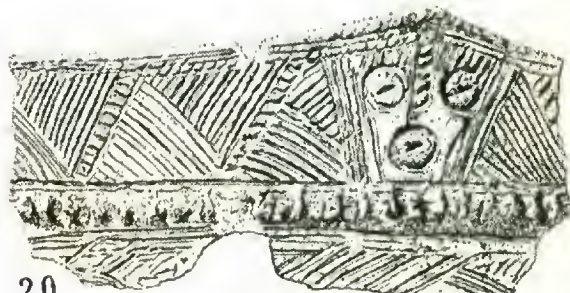
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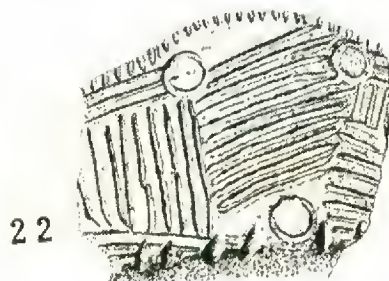
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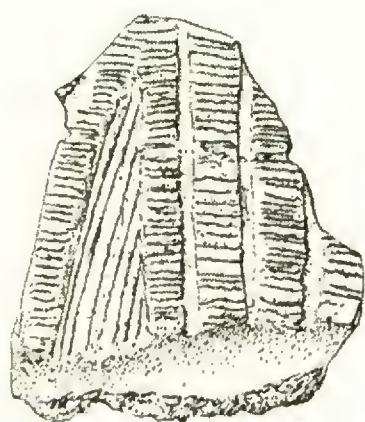


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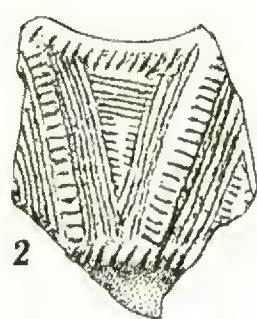
PLATE X

Fragments of Decorated Pottery

- Figure 1. From general digging of site. Cat. No. VIII-F-12041*a*.
 Figure 2. Rim fragment. From deposit 21. Cat. No. VIII-F-14034*a*.
 Figure 3. Rim fragment. From deposit 21. Cat. No. VIII-F-14035*a*.
 Figure 4. Rim fragment. From general digging of site. Cat. No. VIII-F-12044.
 Figure 5. Rim fragment. From deposit 2. Cat. No. VIII-F-10552.
 Figure 6. Rim fragment. From deposit 10. Cat. No. VIII-F-11916.
 Figure 7. Rim fragment. From deposit 1. Cat. No. VIII-F-9676. Cross-section in
 Plate XII, figure 86.
 Figure 8. Rim fragment. From deposit 15. Cat. No. VIII-F-12808*e*.
 Figure 9. Rim fragment. From deposit 15. Cat. No. VIII-F-12807*d*.
 Figure 10. Rim fragment. From deposit 17. Cat. No. VIII-F-13192.
 Figure 11. Rim fragment. From deposit 15. Cat. No. VIII-F-12776*a*.
 Figure 12. Rim fragment. From deposit 1. Cat. No. VIII-F-9919*p*.
 Figure 13. Rim fragment. From deposit 2. Cat. No. VIII-F-10607.
 Figure 14. Rim fragment. From general digging of site. Cat. No. VIII-F-12109*a*.
 Figure 15. Rim fragment. From deposit 15. Cat. No. VIII-F-12562.
 Figure 16. Rim fragment. From deposit 15. Cat. No. VIII-F-12606.
 Figure 17. Rim fragment. From deposit 2. Cat. No. VIII-F-10608.
 Figure 18. Rim fragment. From deposit 15. Cat. No. VIII-F-12604.
 Figure 19. Rim fragment. From deposit 2. Cat. No. VIII-F-10606.
 Figure 20. Rim fragment. From deposit 1. Cat. No. VIII-F-9685. Cross-section in
 Plate XII, figure 90.
 Figure 21. Rim fragment. From deposit 10. Cat. No. VIII-F-11917.



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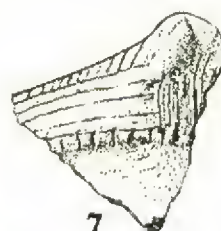
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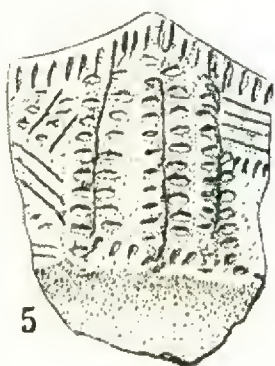
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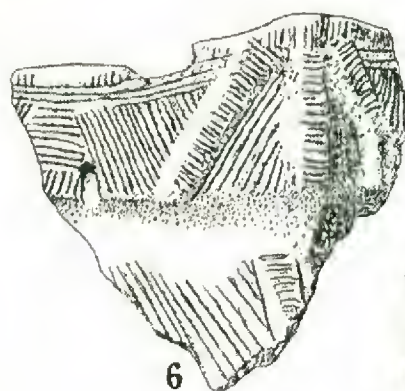
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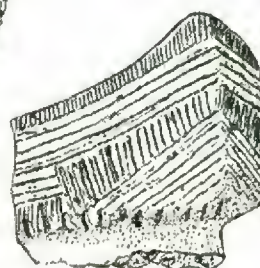
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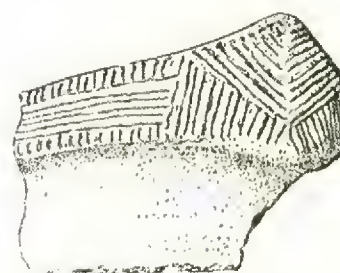
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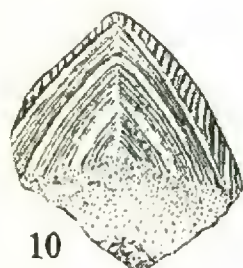
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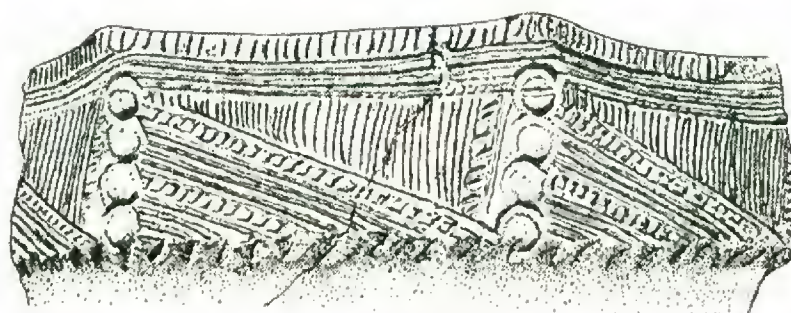
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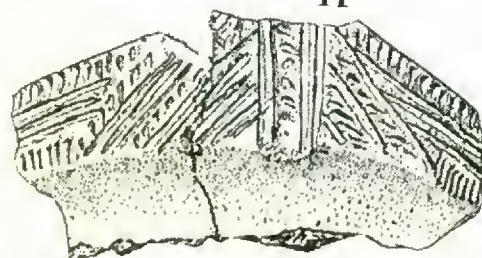
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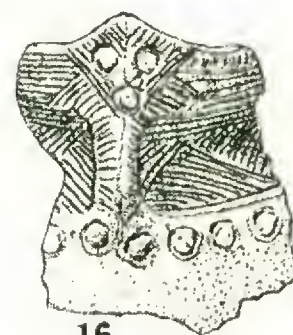
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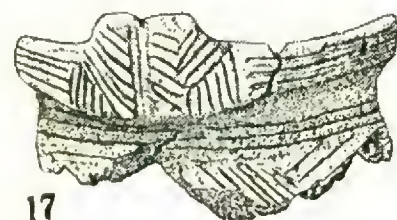
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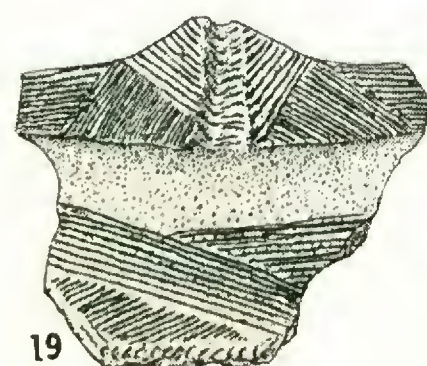
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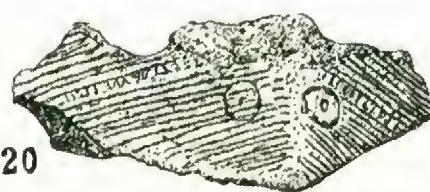
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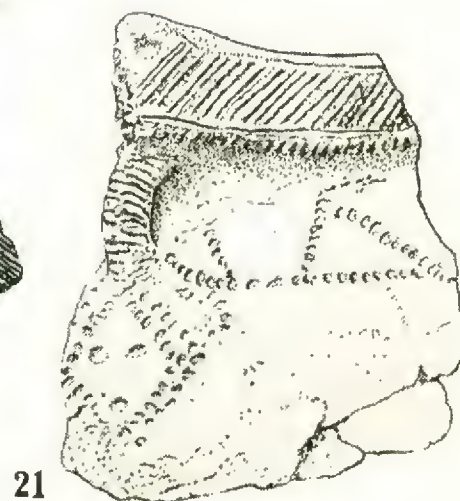
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PLATE XI

Nearly complete pot, highly decorated. From grave No. 21. Cat. No. VIII-F-9462.

PLATE XI



PLATE XII

Cross-sections of Pot Rims(About $\frac{1}{4}$ natural size)

- | | | | |
|------------|---------------------------------|------------|---------------------------------|
| Figure 1. | Cat. No. VIII-F-9487. | Figure 47. | Of rim in Plate III, figure 13. |
| Figure 2. | Cat. No. VIII-F-9467. | Figure 48. | Cat. No. VIII-F-10237a. |
| Figure 3. | Cat. No. VIII-F-13880. | Figure 49. | Cat. No. VIII-F-10732b. |
| Figure 4. | Cat. No. VIII-F-9481. | Figure 50. | Cat. No. VIII-F-12671f. |
| Figure 5. | Of rim in Plate II, figure 15. | Figure 51. | Cat. No. VIII-F-9825b. |
| Figure 6. | Cat. No. VIII-F-9561. | Figure 52. | Cat. No. VIII-F-10707b. |
| Figure 7. | Cat. No. VIII-F-11659. | Figure 53. | Cat. No. VIII-F-12704p. |
| Figure 8. | Cat. No. VIII-F-12082d. | Figure 54. | Cat. No. VIII-F-12769f. |
| Figure 9. | Cat. No. VIII-F-9774a. | Figure 55. | Cat. No. VIII-F-10745f. |
| Figure 10. | Cat. No. VIII-F-11283. | Figure 56. | Cat. No. VIII-F-10573. |
| Figure 11. | Of rim in Plate III, figure 11. | Figure 57. | Cat. No. VIII-F-9622a. |
| Figure 12. | Cat. No. VIII-F-9559. | Figure 58. | Cat. No. VIII-F-13226. |
| Figure 13. | Cat. No. VIII-F-13200. | Figure 59. | Cat. No. VIII-F-12745. |
| Figure 14. | Cat. No. VIII-F-9775. | Figure 60. | Cat. No. VIII-F-11302a. |
| Figure 15. | Cat. No. VIII-F-12299g. | Figure 61. | Of rim in Plate VII, figure 4. |
| Figure 16. | Cat. No. VIII-F-9570b. | Figure 62. | Cat. No. VIII-F-9799c. |
| Figure 17. | Cat. No. VIII-F-12083e. | Figure 63. | Cat. No. VIII-F-9635a. |
| Figure 18. | Cat. No. VIII-F-12687d. | Figure 64. | Cat. No. VIII-F-9628. |
| Figure 19. | Cat. No. VIII-F-9809. | Figure 65. | Of rim in Plate IX, figure 13. |
| Figure 20. | Cat. No. VIII-F-13756. | Figure 66. | Of rim in Plate VI, figure 20. |
| Figure 21. | Cat. No. VIII-F-13864b. | Figure 67. | Cat. No. VIII-F-10247a. |
| Figure 22. | Cat. No. VIII-F-11270. | Figure 68. | Cat. No. VIII-F-10736k. |
| Figure 23. | Cat. No. VIII-F-9769. | Figure 69. | Cat. No. VIII-F-10421. |
| Figure 24. | Cat. No. VIII-F-11272. | Figure 70. | Cat. No. VIII-F-9572. |
| Figure 25. | Of rim in Plate II, figure 18. | Figure 71. | Cat. No. VIII-F-9584. |
| Figure 26. | Cat. No. VIII-F-10638k. | Figure 72. | Of rim in Plate IV, figure 10. |
| Figure 27. | Cat. No. VIII-F-12688h. | Figure 73. | Of rim in Plate VII, figure 5. |
| Figure 28. | Cat. No. VIII-F-12083j. | Figure 74. | Cat. No. VIII-F-12822. |
| Figure 29. | Cat. No. VIII-F-12082d. | Figure 75. | Of rim in Plate VIII, figure 4. |
| Figure 30. | Cat. No. VIII-F-9560. | Figure 76. | Cat. No. VIII-F-10517a. |
| Figure 31. | Of rim in Plate II, figure 30. | Figure 77. | Cat. No. VIII-F-10492. |
| Figure 32. | Cat. No. VIII-F-10493. | Figure 78. | Of rim in Plate III, figure 26. |
| Figure 33. | Cat. No. VIII-F-10845. | Figure 79. | Cat. No. VIII-F-12809d. |
| Figure 34. | Of rim in Plate II, figure 37. | Figure 80. | Of rim in Plate VII, figure 3. |
| Figure 35. | Cat. No. VIII-F-10491. | Figure 81. | Cat. No. VIII-F-9553. |
| Figure 36. | Cat. No. VIII-F-12083a. | Figure 82. | Of rim in Plate IX, figure 27. |
| Figure 37. | Cat. No. VIII-F-12295. | Figure 83. | Cat. No. VIII-F-12769d. |
| Figure 38. | Cat. No. VIII-F-12084. | Figure 84. | Of rim in Plate IV, figure 12. |
| Figure 39. | Cat. No. VIII-F-12585. | Figure 85. | Cat. No. VIII-F-9675. |
| Figure 40. | Cat. No. VIII-F-12600. | Figure 86. | Of rim in Plate X, figure 7. |
| Figure 41. | Cat. No. VIII-F-11289h. | Figure 87. | Cat. No. VIII-F-13939. |
| Figure 42. | Cat. No. VIII-F-12301l. | Figure 88. | Cat. No. VIII-F-10500. |
| Figure 43. | Cat. No. VIII-F-10738a. | Figure 89. | Cat. No. VIII-F-14038. |
| Figure 44. | Of rim in Plate IX, figure 11. | Figure 90. | Of rim in Plate X, figure 20. |
| Figure 45. | Of rim in Plate IV, figure 13. | Figure 91. | Cat. No. VIII-F-9681. |
| Figure 46. | Of rim in Plate III, figure 9. | Figure 92. | Cat. No. VIII-F-11140. |

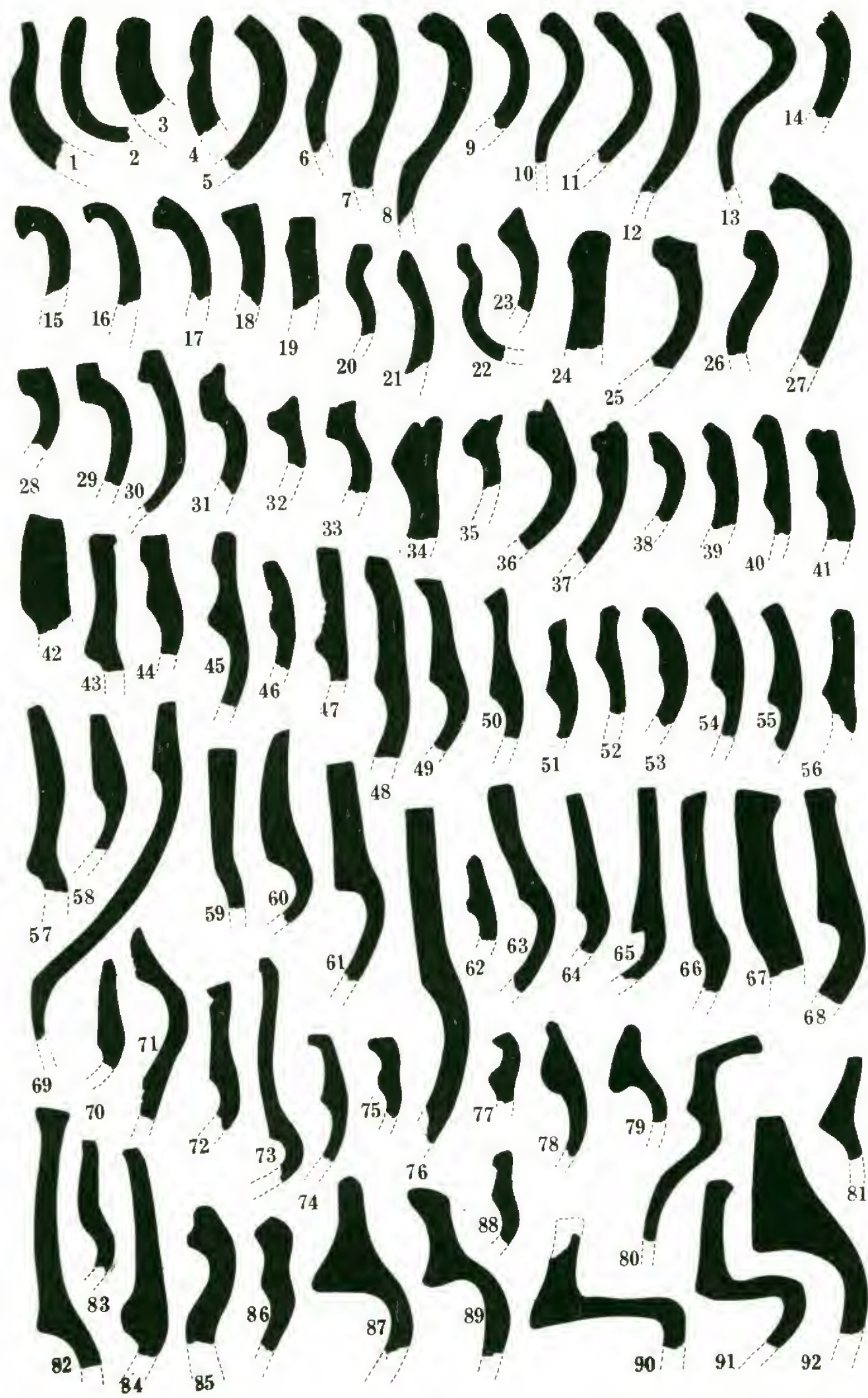


PLATE XIII

Chevrons and other complex patterns on pottery.



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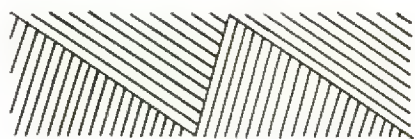
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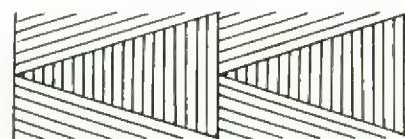
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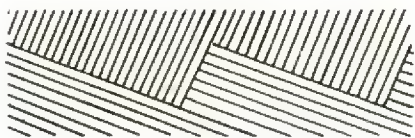
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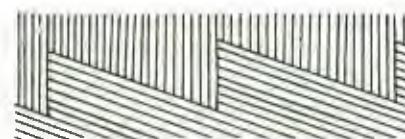
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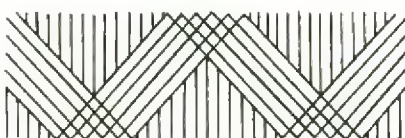
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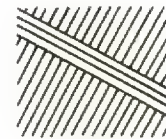
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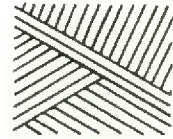
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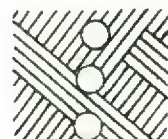
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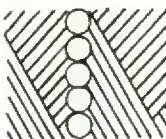
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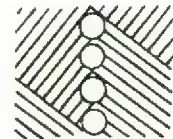
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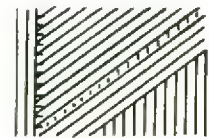
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PLATE XIV

Implements Used by Men and Women

- Figure 1. Chisel-like object made from incisor tooth of beaver. From 10 inches deep in deposit 7. Cat. No. VIII-F-11735.
- Figure 2. Knife blade made from canine of bear. From 10 inches deep in deposit 7. Cat. No. VIII-F-11738.
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- Figure 4. Canine of bear with tip ground off. From surface of site. Cat. No. VIII-F-13696b.
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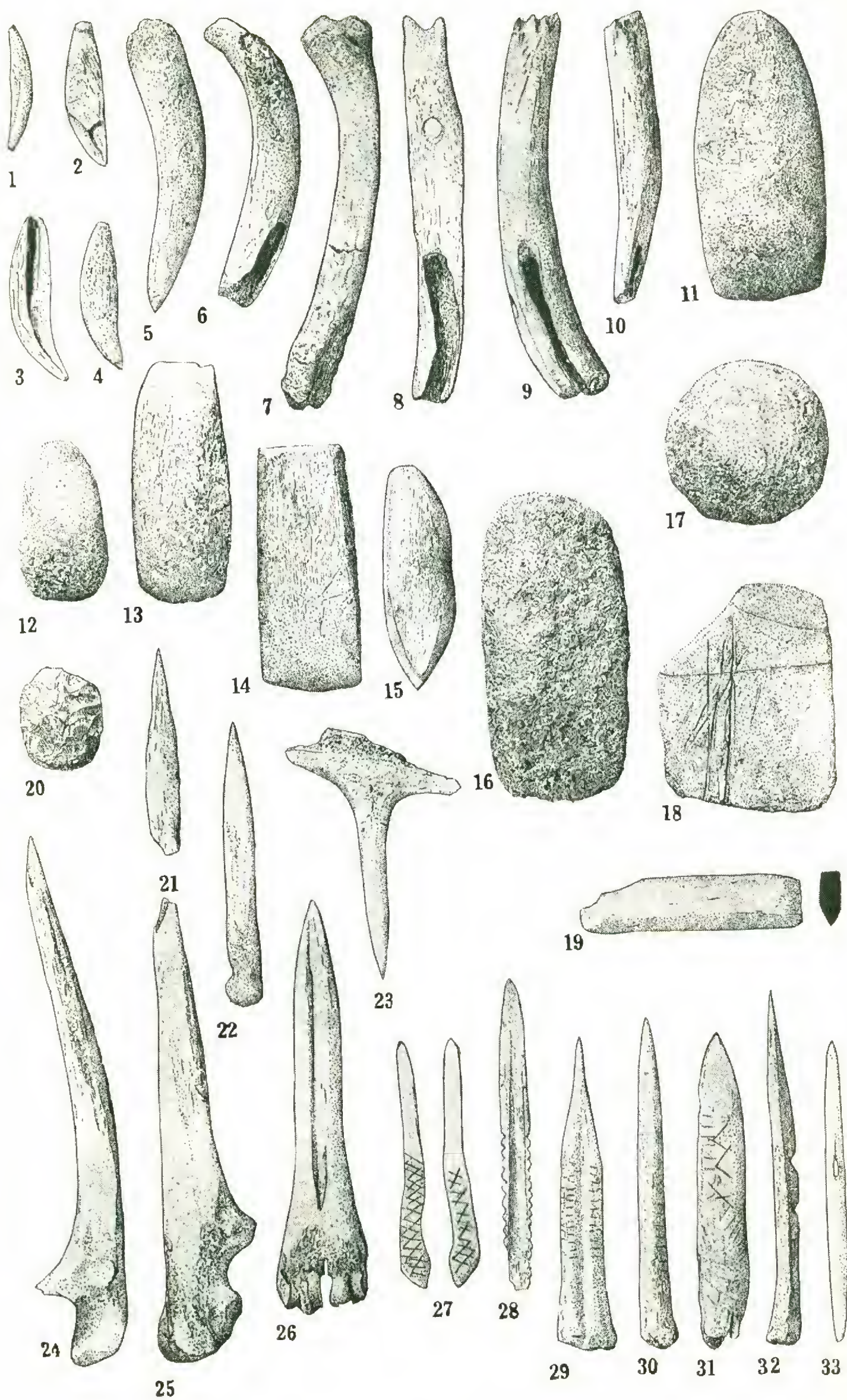


PLATE XV

*Articles of Personal Adornment, Objects Used in Games,
Articles of Superstition and Religion, and Pipes*

- Figure 1. Antler comb. From deposit 21. Cat. No. VIII-F-14072.
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 Figure 10. Shell bead. From deposit 19. Cat. No. VIII-F-13957.
 Figure 11. Bone bead. From 6 inches deep in deposit 11. Cat. No. VIII-F-12246.
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 Figure 17. Potsherd disk. From deposit 1. Cat. No. VIII-F-10115a.
 Figure 18. Incised concretion. From deposit 21. Cat. No. VIII-F-14082.
 Figure 19. Probable unit for cup and pin game. From 12 inches deep in deposit 15. Cat. No. VIII-F-13106.
 Figure 20. Probable unit for cup and pin game. From 6 inches deep in deposit 15. Cat. No. VIII-F-13105.
 Figure 21. Incised deer phalanx. From 18 inches deep in deposit 15. Cat. No. VIII-F-13110.
 Figure 22. Probable unit for cup and pin game. From 18 inches deep in deposit 7. Cat. No. VIII-F-11869.
 Figure 23. Probable unit for cup and pin game. From 2 feet deep in deposit 15. Cat. No. VIII-F-13103.
 Figure 24. Marked side of deer phalanx. From 8 inches deep in deposit 4. Cat. No. VIII-F-11520.
 Figure 25. Bone object. From deposit 18. Cat. No. VIII-F-13291.
 Figure 26. Bone object. From 10 inches deep in deposit 10. Cat. No. VIII-F-11993.
 Figure 27. Bone object. From deposit 1. Cat. No. VIII-F-10143.
 Figure 28. Bone object. From deposit 1. Cat. No. VIII-F-10139.
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 Figure 30. Earthenware figurine. From 5 inches deep in deposit 15. Cat. No. VIII-F-13155.
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 Figure 35. Earthenware pipe. From deposit 20. Cat. No. VIII-F-13979.
 Figure 36. Earthenware pipe. From deposit 18. Cat. No. VIII-F-13293.
 Figure 37. Fragment of earthenware pipe. From deposit 2. Cat. No. VIII-F-11066.
 Figure 38. Fragment of earthenware pipe. From deposit 1. Cat. No. VIII-F-10183.
 Figure 39. Bone pipe. From deposit 7. Cat. No. VIII-F-11891.
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 Figure 45. Earthenware pipe. From deposit 1. Cat. No. VIII-F-10163.
 Figure 46. Earthenware pipe. From deposit 21. Cat. No. VIII-F-14097.
 Figure 47. Broken stone pipe. From surface. Cat. No. VIII-F-13567.

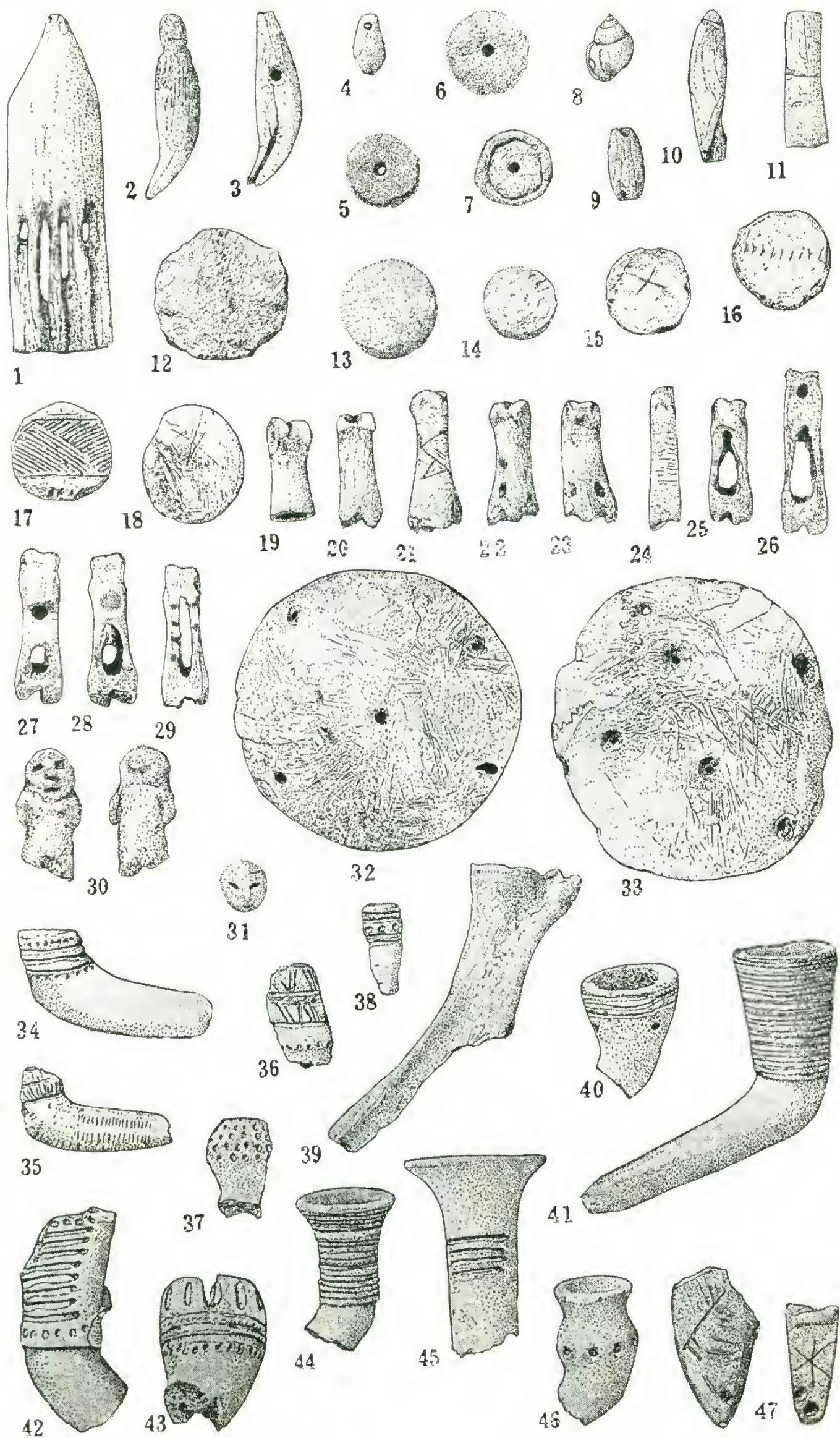


PLATE XVI

Earthenware Pipes

- Figure 1. Fragment with part of coiled snake forms. From 10 inches deep in deposit 7. Cat. No. VIII-F-11889.
- Figure 2. Fragment with part of coiled snake form. From deposit 13. Cat. No. VIII-F-12366.
- Figure 3. Fragment with part of snake form. From 6 inches deep in deposit 2. Cat. No. VIII-F-11088.
- Figure 4. Fragment with fish or snake forms. From deposit 17. Cat. No. VIII-F-13275.
- Figure 5. Two sides of fish form. From 1 foot deep in deposit 7. Cat. No. VIII-F-11885.
- Figure 6. Pipe fragment. From 14 inches deep in deposit 7. Cat. No. VIII-F-11881.
- Figure 7. Fragment with owl form. From 18 inches deep in deposit 18. Cat. No. VIII-F-13294.
- Figure 8. Bowl with bird head. From 12 inches deep in deposit 15. Cat. No. VIII-F-13144.
- Figure 9. Bird, snake, or turtle head from pipe bowl. From surface of deposit 20. Cat. No. VIII-F-9189.
- Figure 10. Bird, snake, or turtle head from pipe bowl. From surface near deposit 14. Cat. No. VIII-F-12392.
- Figure 11. Bowl with owl head. From 20 inches deep in deposit 4. Cat. No. VIII-F-11546.
- Figure 12. Bowl with owl head. From 6 inches deep in deposit 10. Cat. No. VIII-F-12006.
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- Figure 15. Fragment of bowl with human faces. From surface of site. Cat. No. VIII-F-9188.
- Figure 16. Badly mutilated face from pipe bowl. From 10 inches deep in deposit 2. Cat. No. VIII-F-11087.
- Figure 17. Face from pipe bowl. From 2 feet deep in deposit 4. Cat. No. VIII-F-11547.
- Figure 18. Pipe with face on bowl. From 18 inches deep in deposit 10. Cat. No. VIII-F-12005.
- Figure 19. Face from pipe bowl. From deposit 2. Cat. No. VIII-F-11081.
- Figure 20. Face from pipe bowl. From deposit 2. Cat. No. VIII-F-11082.
- Figure 21. Pipe bowl with human face on side. From 8 inches deep in deposit 4. Cat. No. VIII-F-11548.
- Figure 22. Tubular pipe, probably from Roebuck site. Cat. No. 22023, Provincial Museum collection, Royal Ontario Museum of Archaeology, Toronto. $\frac{1}{2}$ natural size.
- Figure 23. Bowl with two human forms. From lot 4, con. IV, Augusta tp., Grenville co., about $\frac{1}{4}$ mile west of site. Cat. No. VIII-F-9079, collected by Mrs. W. McKinley.
- Figure 24. Two sides of decorated stem. From deposit 2. Cat. No. VIII-F-11054.
- Figure 25. Pipe. From surface of site. In White collection. $\frac{1}{2}$ natural size.
- Figure 26. Two sides of decorated stem. From surface of site. In White collection. $\frac{1}{2}$ natural size.
- Figure 27. Two sides of decorated stem. From surface of site. In White collection. $\frac{1}{2}$ natural size.



PLATE XVII

Problematical and Miscellaneous Objects

- Figure 1. Paddle-shaped bone object. From 14 inches deep in deposit 4. Cat. No. VIII-F-11373.
- Figure 2. Knife-like bone object. From 8 inches deep in deposit 2. Cat. No. VIII-F-10815.
- Figure 3. Spatulate object derived from dog ulna. From 6 inches deep in deposit 10. Cat. No. VIII-F-11925.
- Figure 4. Bone object. From deposit 1. Cat. No. VIII-F-9995.
- Figure 5. Bone object. From deposit 15. Cat. No. VIII-F-12880.
- Figure 6. Broken, perforated, antler object. From deposit 1. Cat. No. VIII-F-10026.
- Figure 7. Decorated bone object. From deposit 9. Cat. No. VIII-F-11898.
- Figure 8. Fragment of perforated, antler object. From deposit 1. Cat. No. VIII-F-9963.
- Figure 9. Fragment of bone object. From deposit 18. Cat. No. VIII-F-13921.
- Figure 10. Object derived from canine of dog. From 14 inches deep in deposit 10. Cat. No. VIII-F-11984.
- Figure 11. Perforated wooden object. From about 8 inches deep in spring. Cat. No. VIII-F-10209.
- Figure 12. Crude object chipped from cherty limestone. From deposit 4. Cat. No. VIII-F-11369.
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- Figure 14. Notched rib. From deposit 2. Cat. No. VIII-F-10917.
- Figure 15. Earthenware object. From deposit 2. Cat. No. VIII-F-10366.
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- Figure 20. Object made of a potsherd. From deposit 19. Cat. No. VIII-F-13950.
- Figure 21. Unfinished object derived from human fibula. From deposit 1. Cat. No. VIII-F-10049.
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- Figure 24. Perforated, antler tool. From 14 inches deep in deposit 5. Cat. No. VIII-F-11579.
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- Figure 26. Perforated, antler tool. From 12 inches deep in deposit 10. Cat. No. VIII-F-11920.
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- Figure 28. Perforated, bone tool. From 8 inches deep in deposit 7. Cat. No. VIII-F-11619.

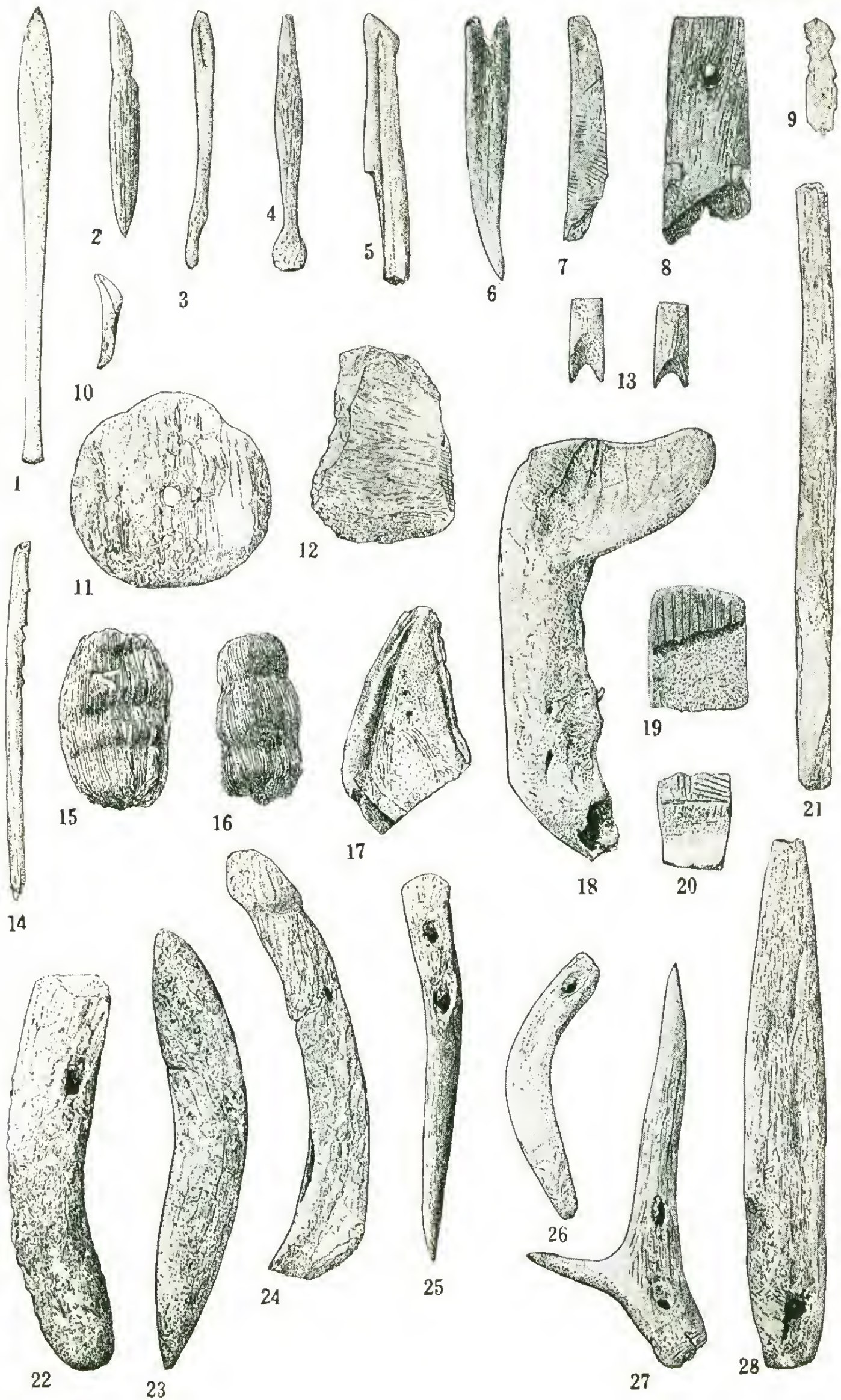


PLATE XVIII

*Charred Corn-cobs and Charred Specimens Derived from
Vegetal Materials**($\frac{1}{2}$ natural size)*

- Figures 1, 2. Charred corn-cobs. From deposit 15. Cat. Nos. VIII-F-12441 and VIII-F-12442.
- Figure 3. Piece of partly charred birch bark which appears to be part of a receptacle. From 2 feet deep in spring. Cat. No. VIII-F-10207.
- Figure 4. Charred, button-like, wooden object, possibly used in game. From deposit 21. Cat. No. VIII-F-13982.
- Figure 5. Carbonized, 3-ply rope made of strips of bark. From 18 inches deep in deposit 1. Cat. No. VIII-F-10079.
- Figure 6. Fragment of carbonized, coarse textile, probably part of bag. From 21 inches deep in deposit 15. Cat. No. VIII-F-13056.
- Figure 7. Reconstruction of textile seen in figure 6.
- Figure 8. Detail (large scale) showing technique.



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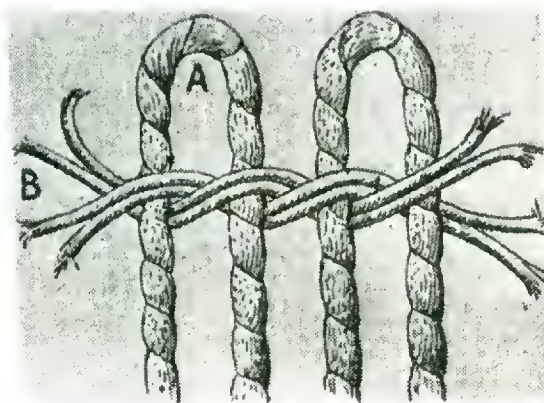
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PLATE XIX

Graves

- Figure 1. Typical burial. Skeleton No. 28, viewed from the east.
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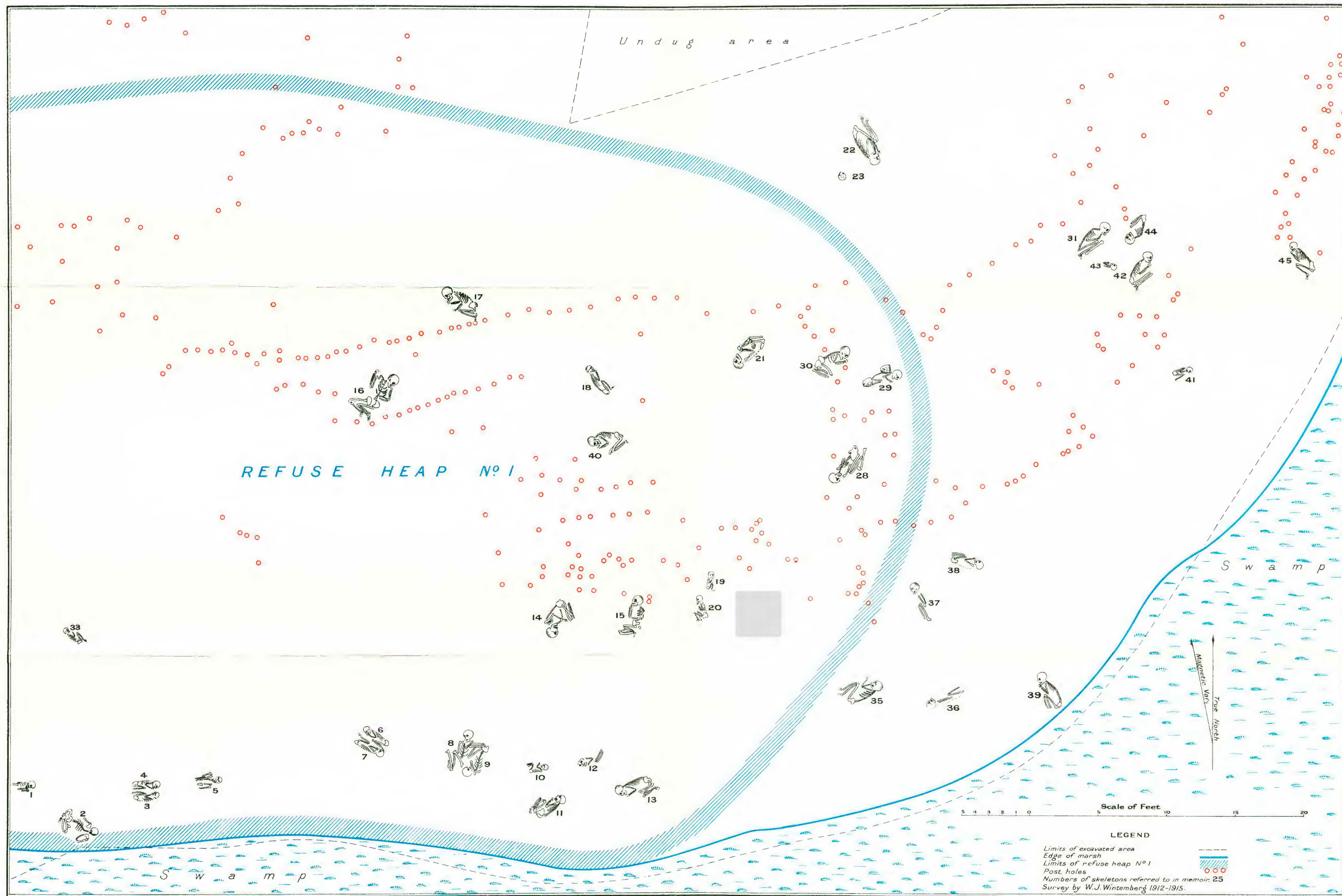
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To accompany Memoir by Harlan I. Smith and W.J. Wintenberg

DIAGRAM OF
BURIALS IN AND NEAR
REFUSE HEAP N° 1, ROEBUCK SITE
ONTARIO

